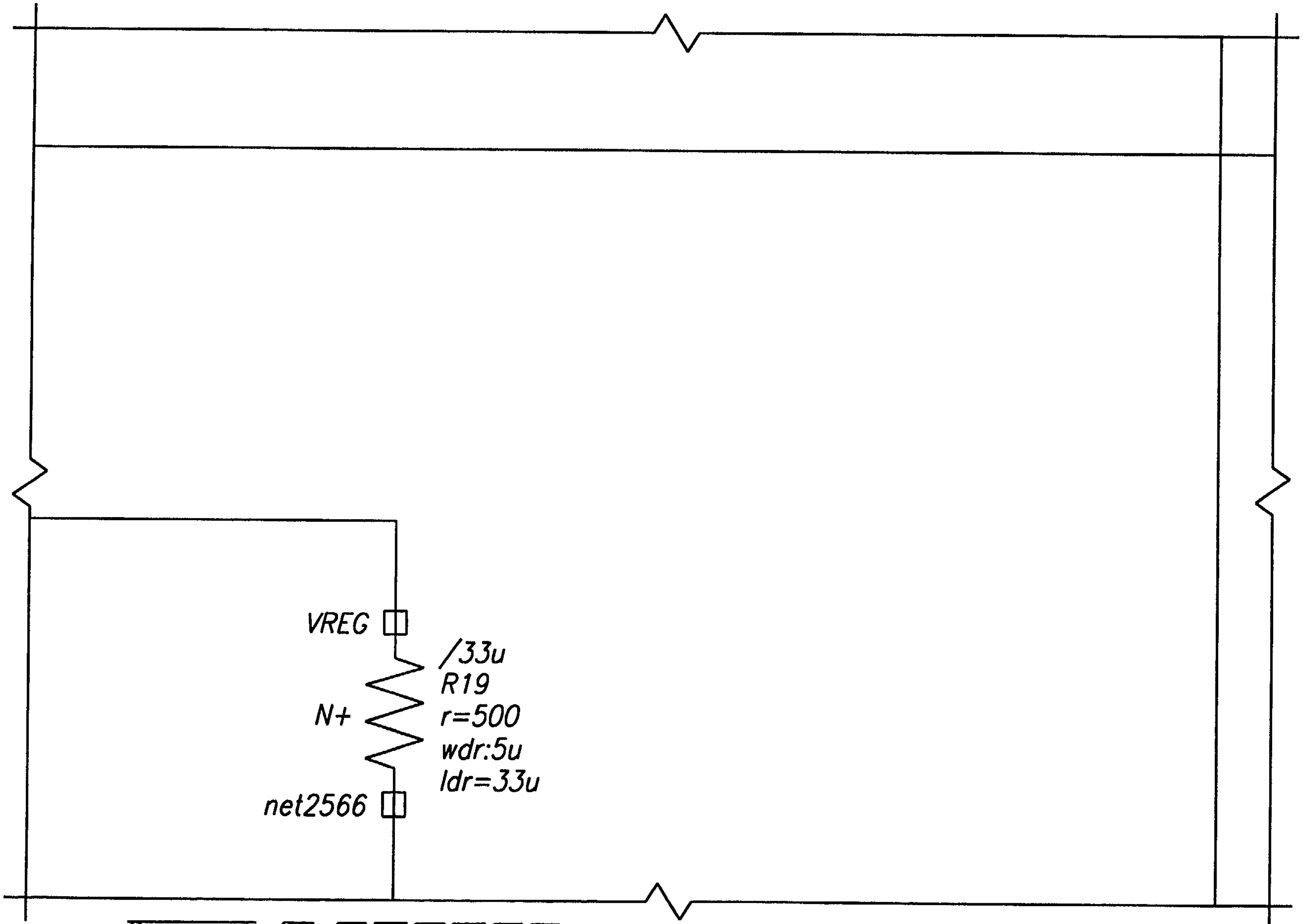


Fig 8.0606CE

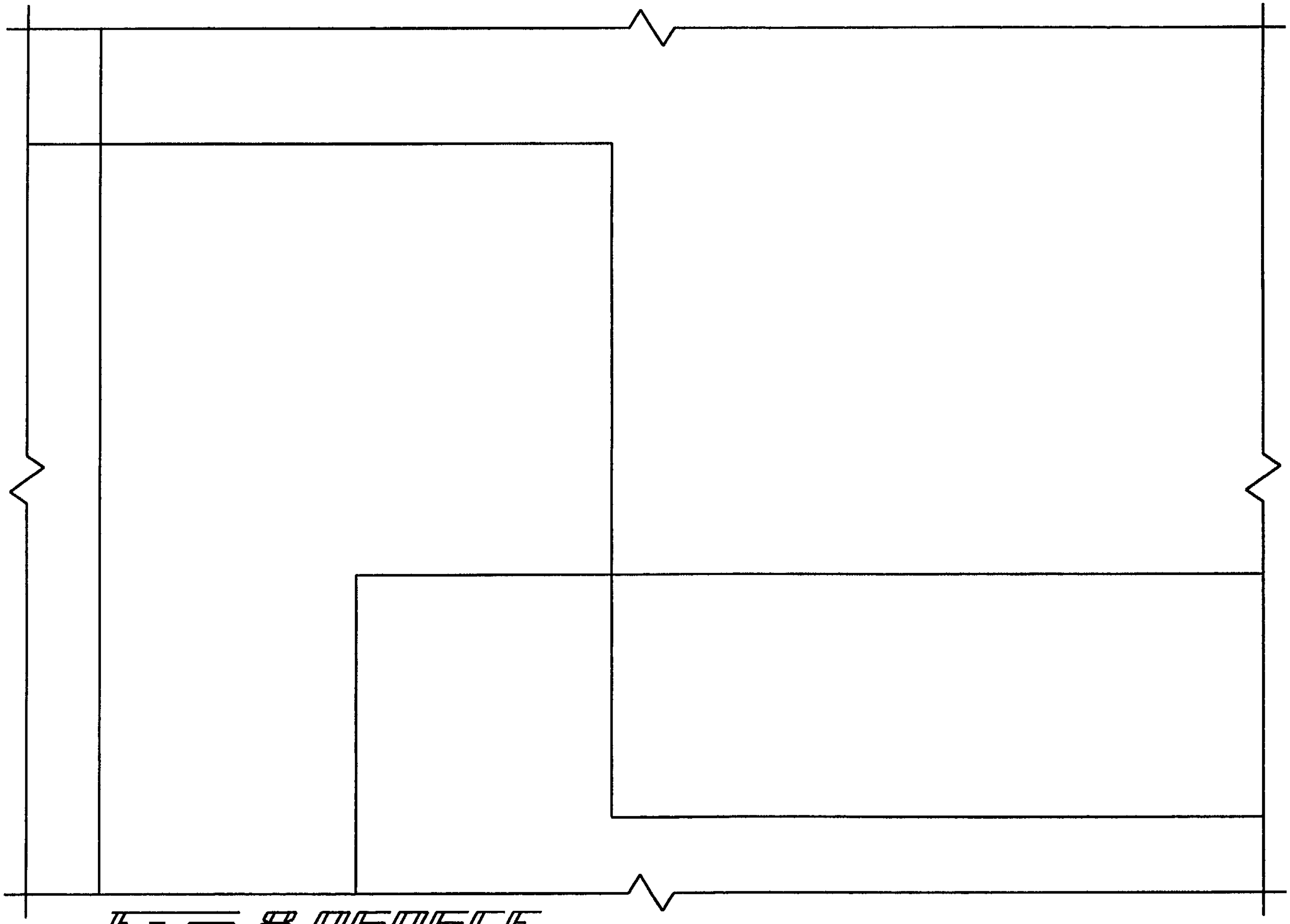


Fig 8.0606CF

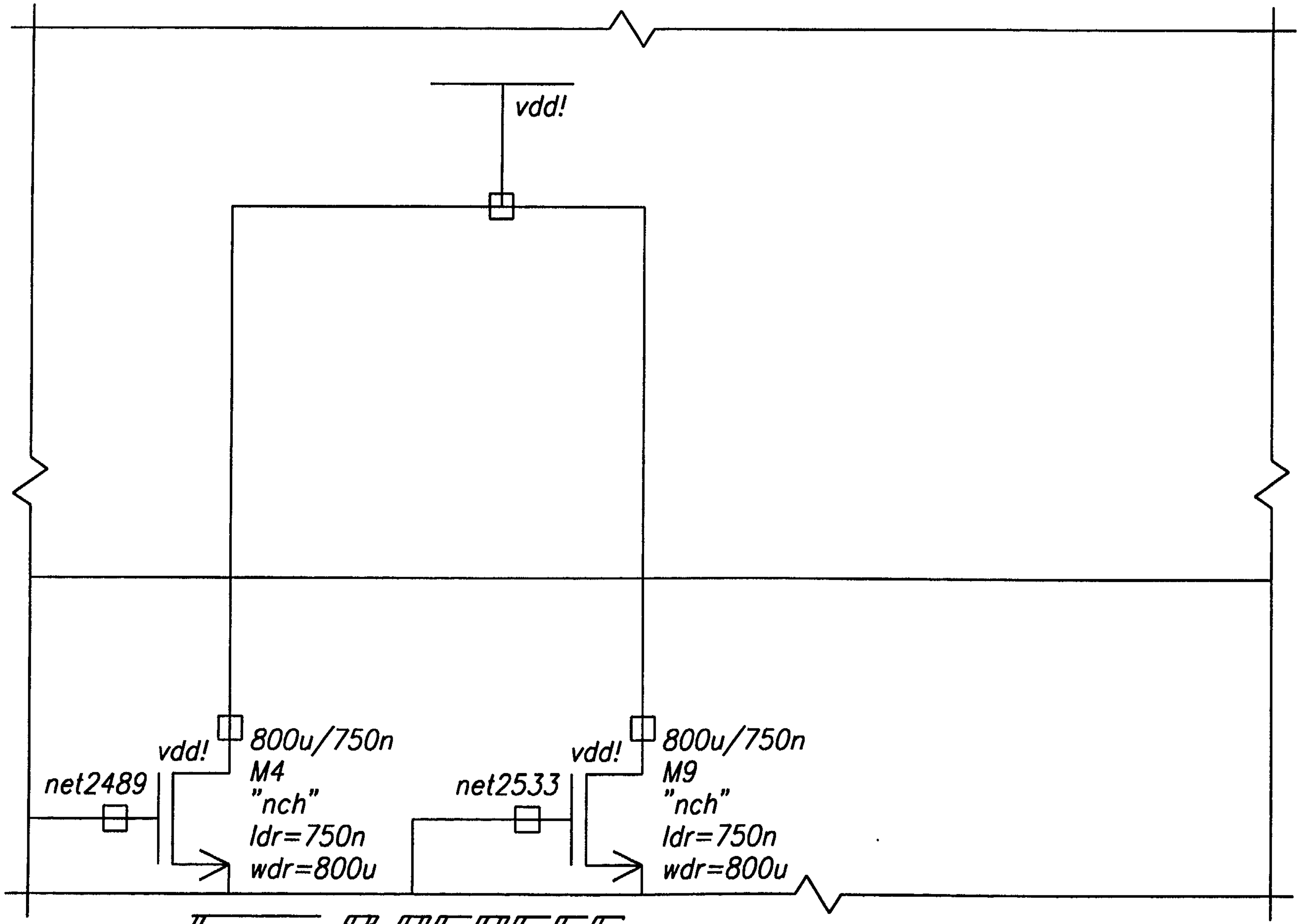
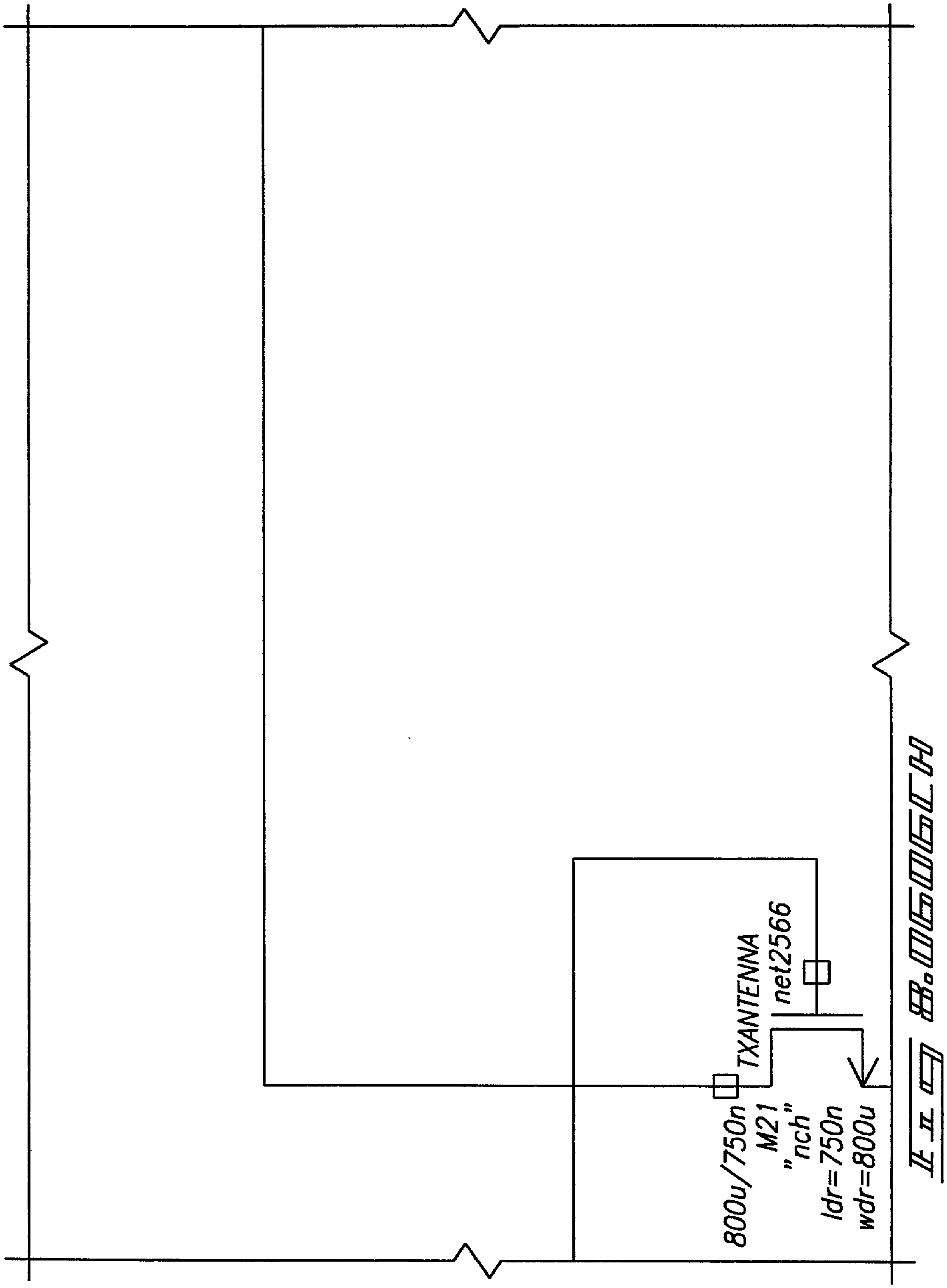

vdd!
vdd!
net2489
800u/750n
M4
"nch"
ldr=750n
wdr=800u
vdd!
net2533
800u/750n
M9
"nch"
ldr=750n
wdr=800u

Fig 8.0606CG


TXANTENNA
net2566
800u/750n
M21
"nch"
ldr=750n
wdr=800u

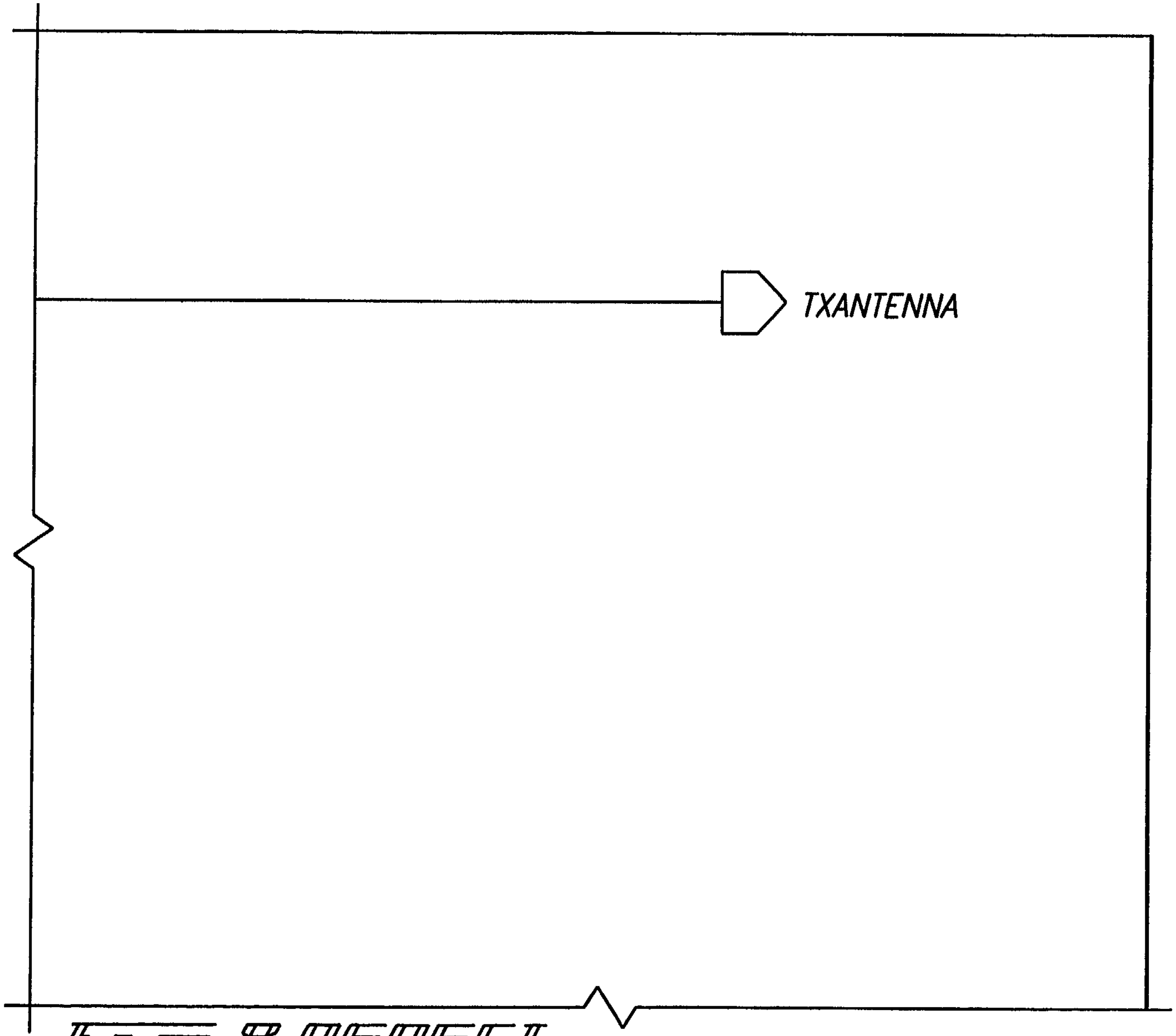


Fig 8.0606CI

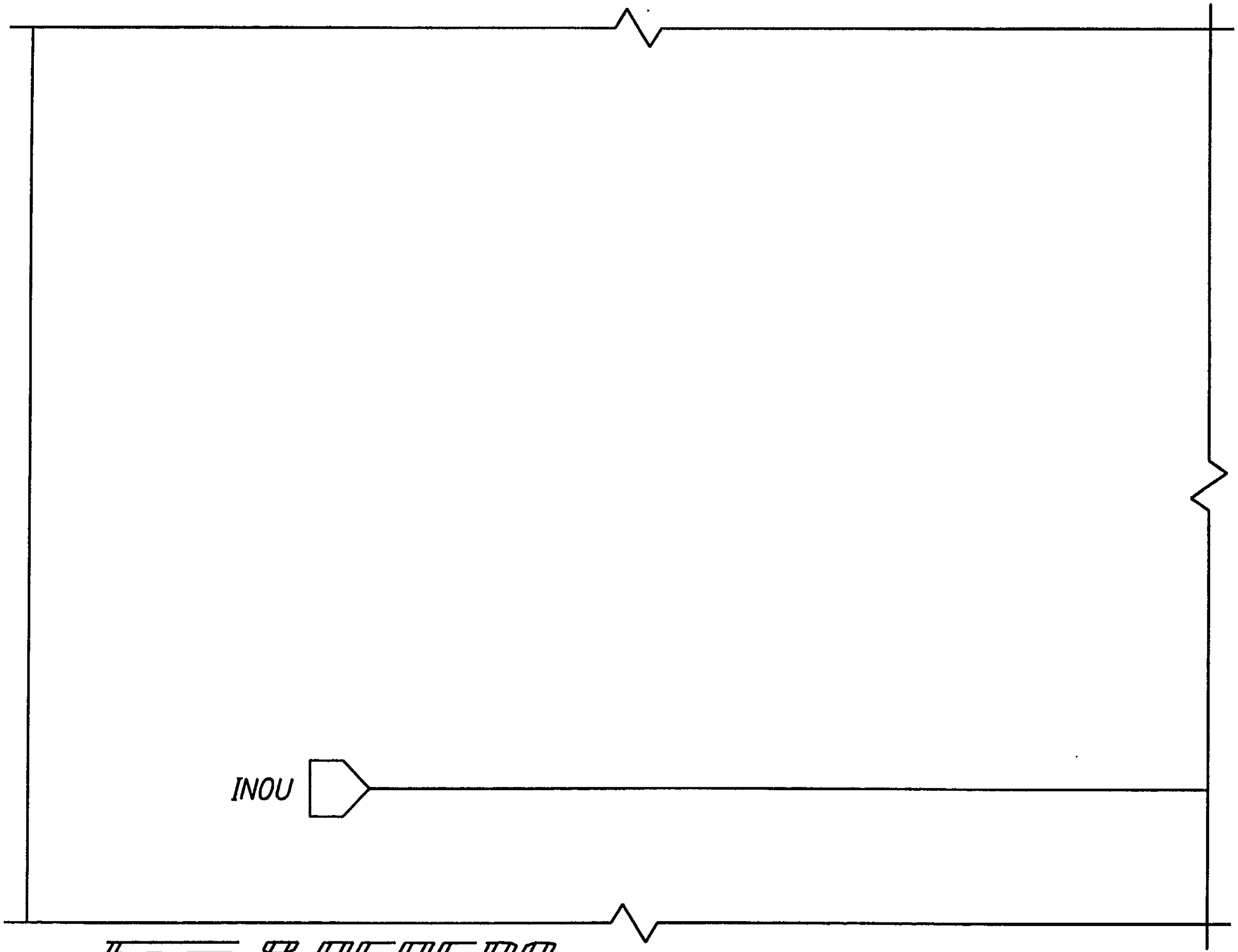


Fig 8.0606DA

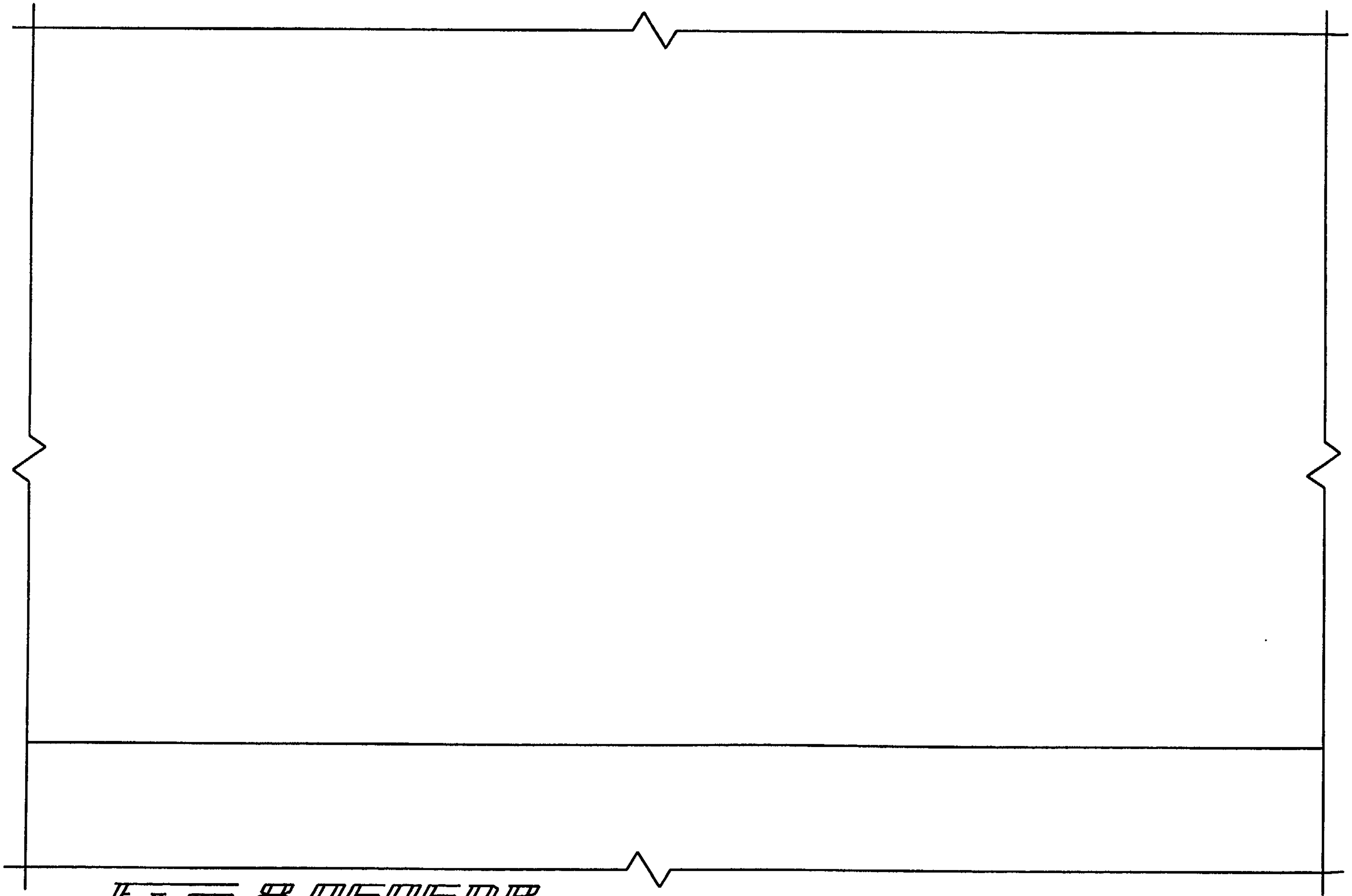


Fig 8.0606DB

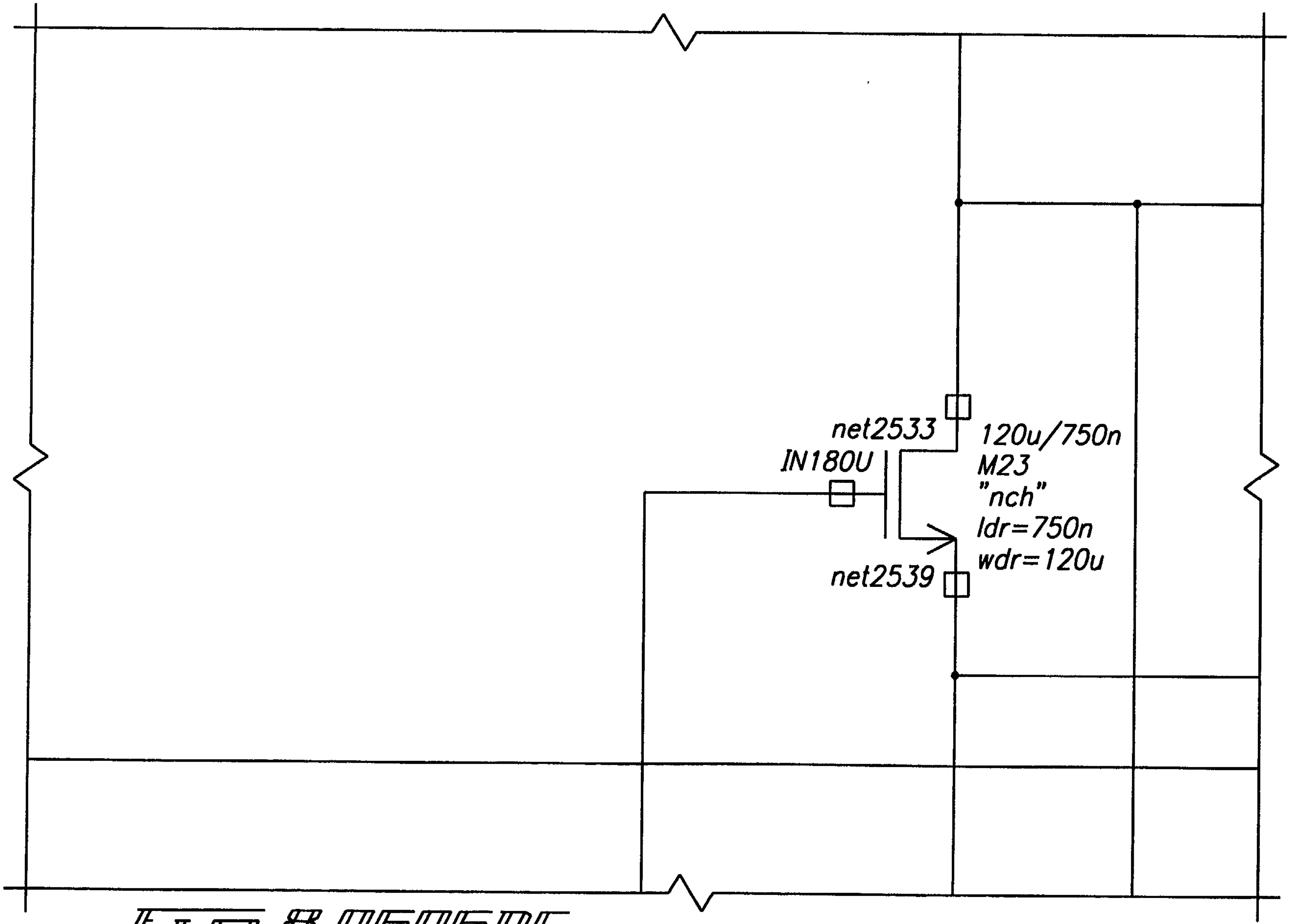


Fig. 8.0606DC

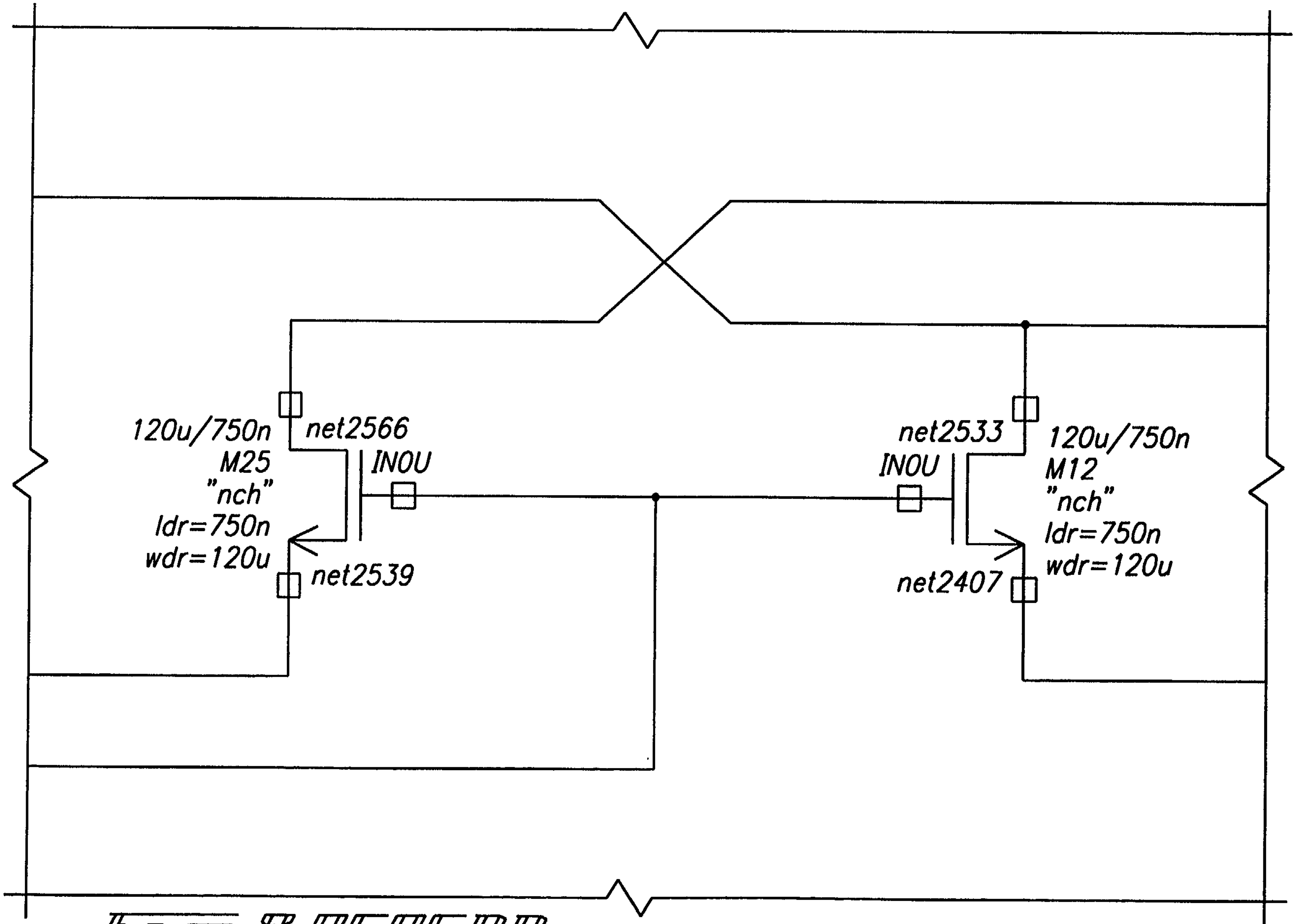

120u/750n
M25
"nch"
ldr=750n
wdr=120u
net2566
INOU
net2539
net2533
INOU
net2407
120u/750n
M12
"nch"
ldr=750n
wdr=120u

Fig 8.0606DD

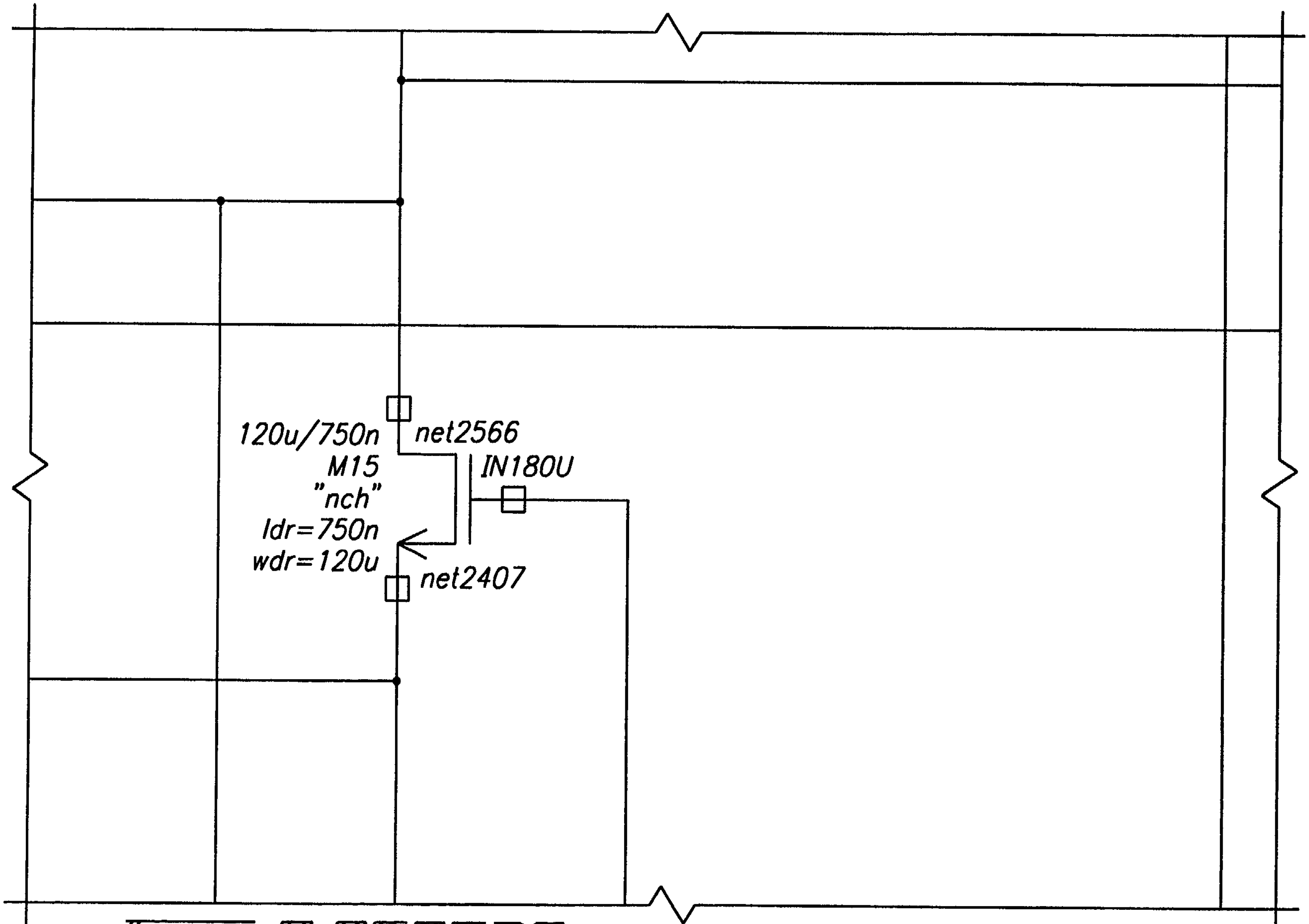
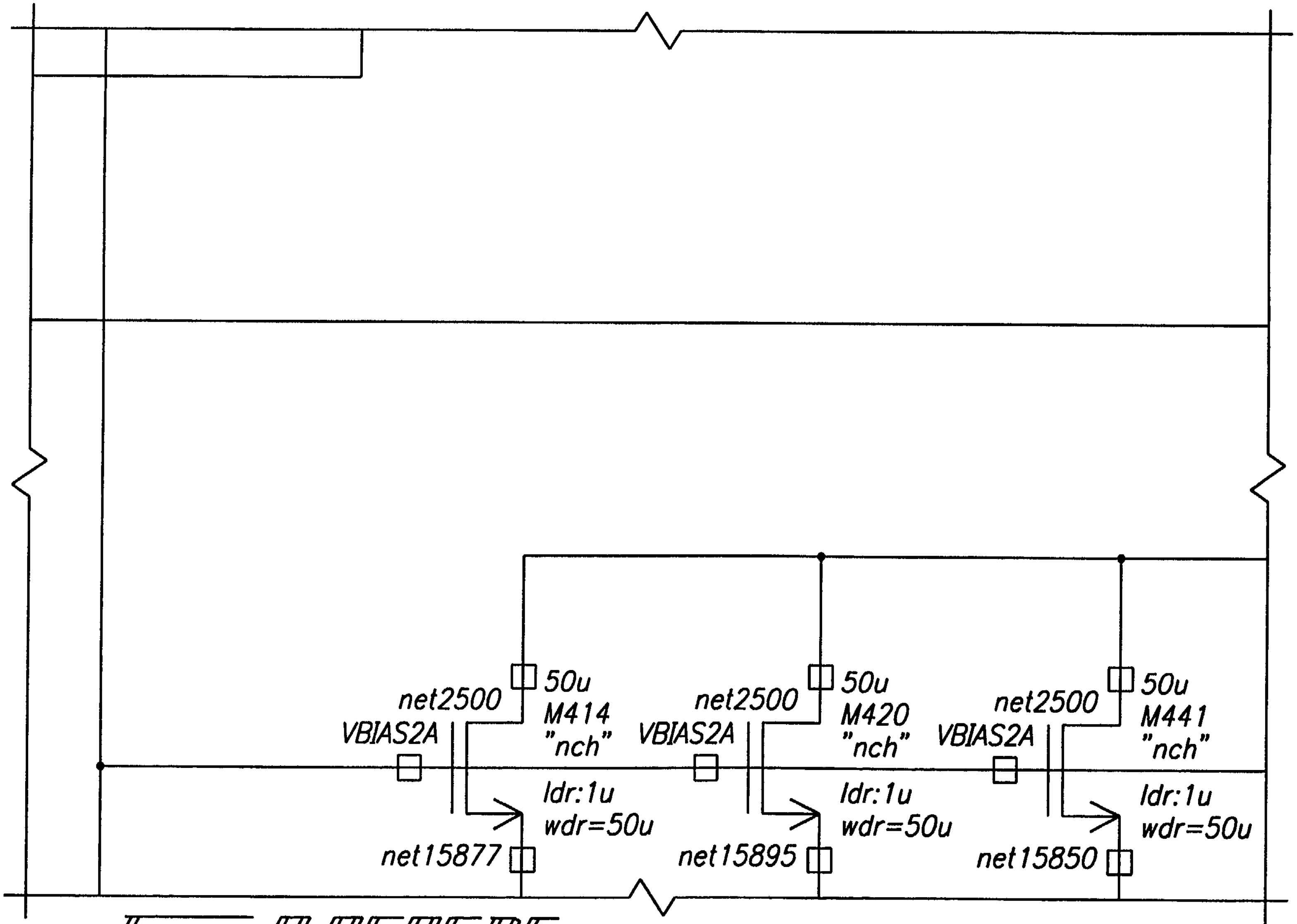


Fig 8.0606DE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50u
M414
"nch"
VBIAS2A
ldr:1u
wdr=50u
net15877
net2500
50u
M420
"nch"
VBIAS2A
ldr:1u
wdr=50u
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net2500
50u
M441
"nch"
VBIAS2A
ldr:1u
wdr=50u
net15850

Fig 8.0606DF

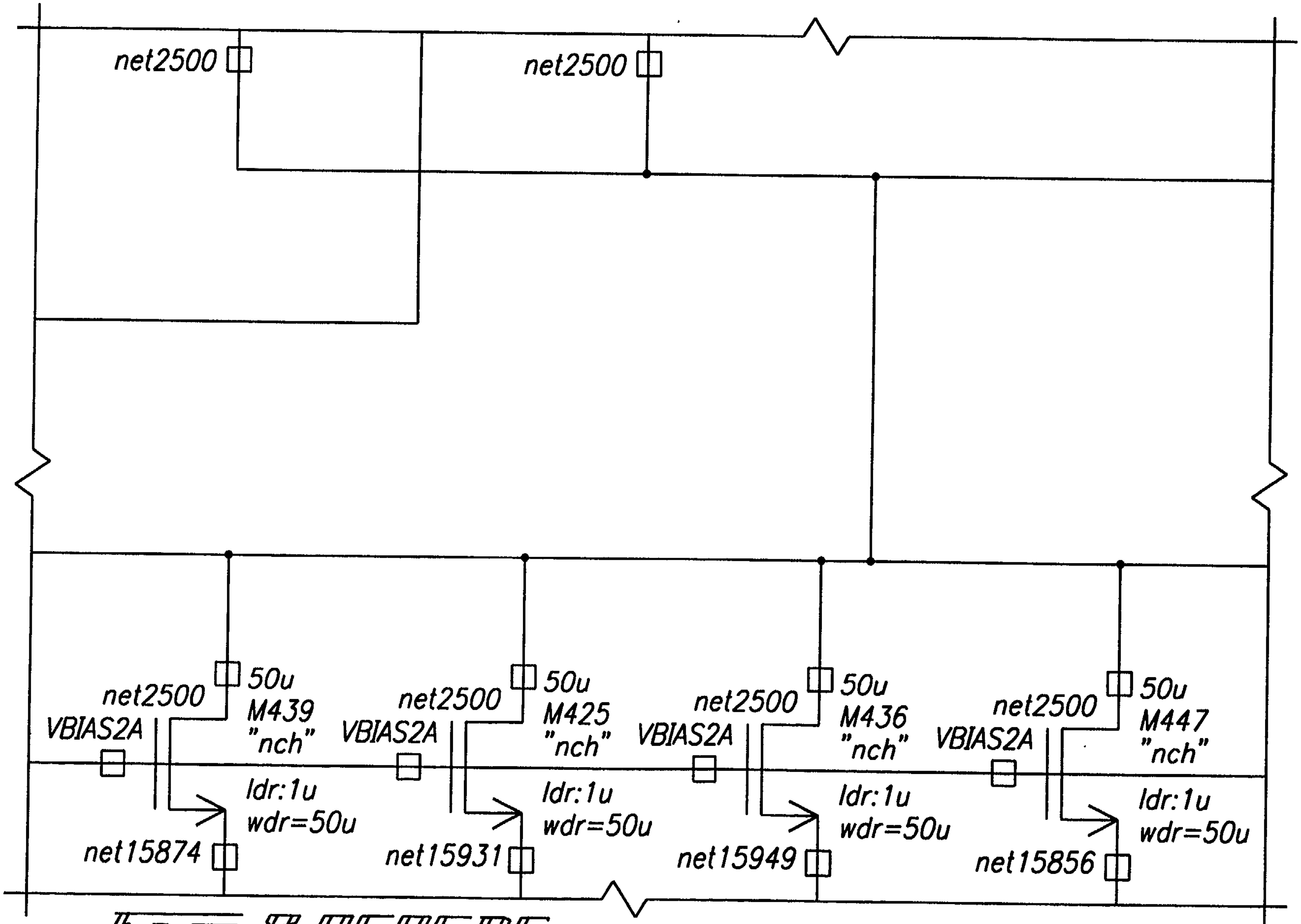
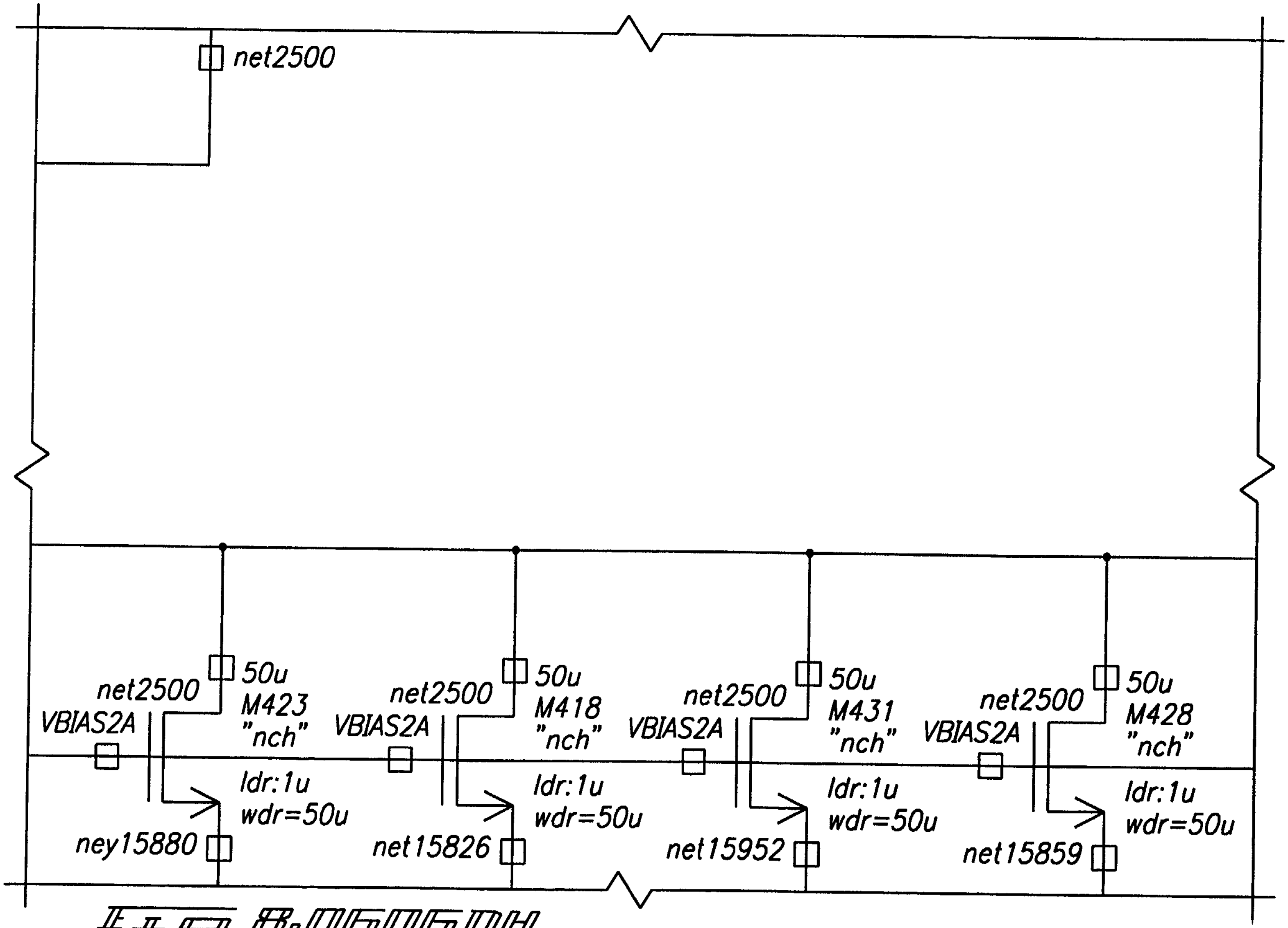

net2500
net2500
net2500
50u
M439
"nch"
VBIAS2A
ldr:1u
wdr=50u
net15874
net2500
50u
M425
"nch"
VBIAS2A
ldr:1u
wdr=50u
net15931
net2500
50u
M436
"nch"
VBIAS2A
ldr:1u
wdr=50u
net15949
net2500
50u
M447
"nch"
VBIAS2A
ldr:1u
wdr=50u
net15856

Fig 8.060606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net2500
VBIAS2A
50u
M423
"nch"
ldr:1u
wdr=50u
ney15880
net2500
VBIAS2A
50u
M418
"nch"
ldr:1u
wdr=50u
net15826
net2500
VBIAS2A
50u
M431
"nch"
ldr:1u
wdr=50u
net15952
net2500
VBIAS2A
50u
M428
"nch"
ldr:1u
wdr=50u
net15859

Fig 8.0606DH

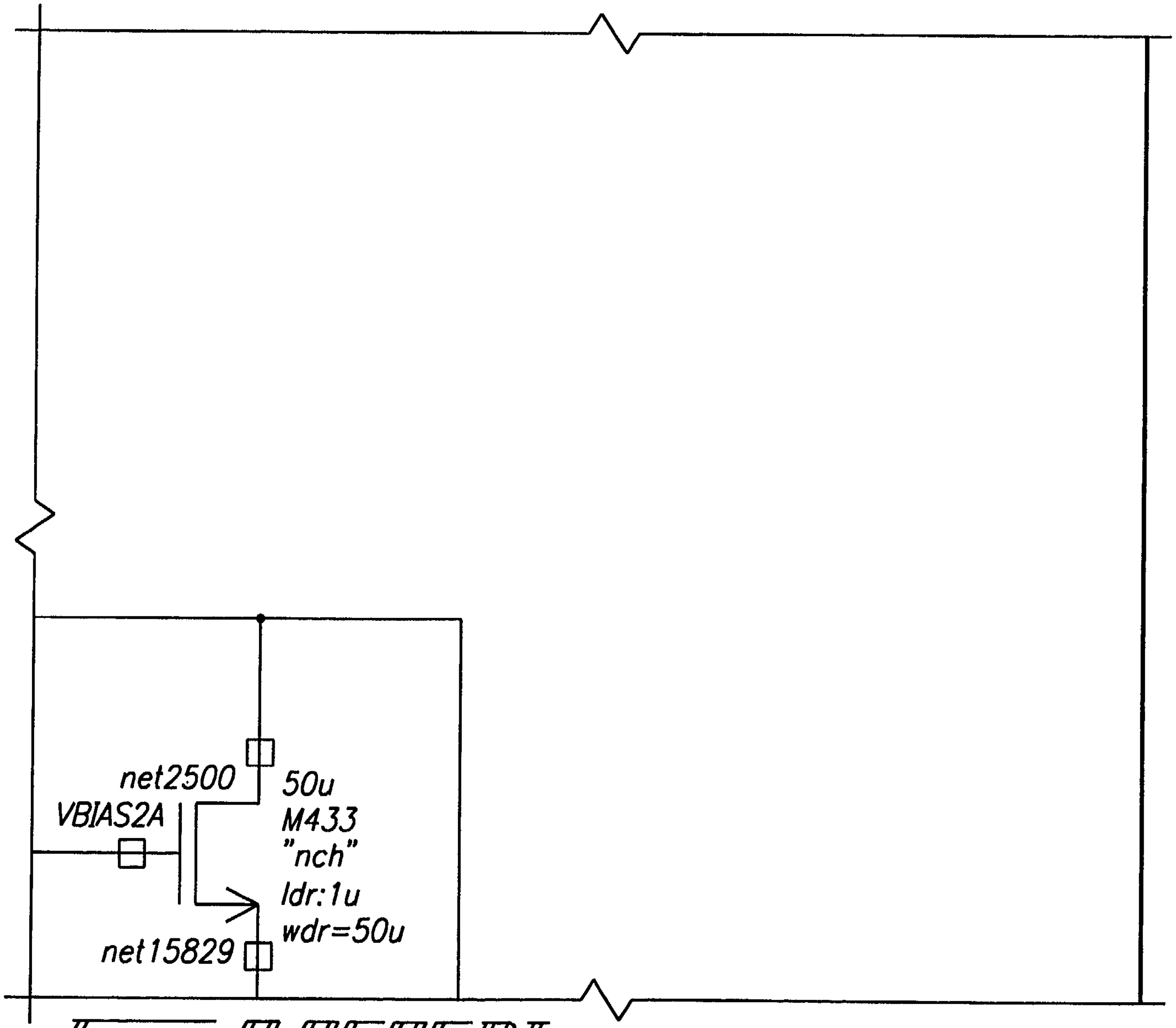


Fig 8.0606DI

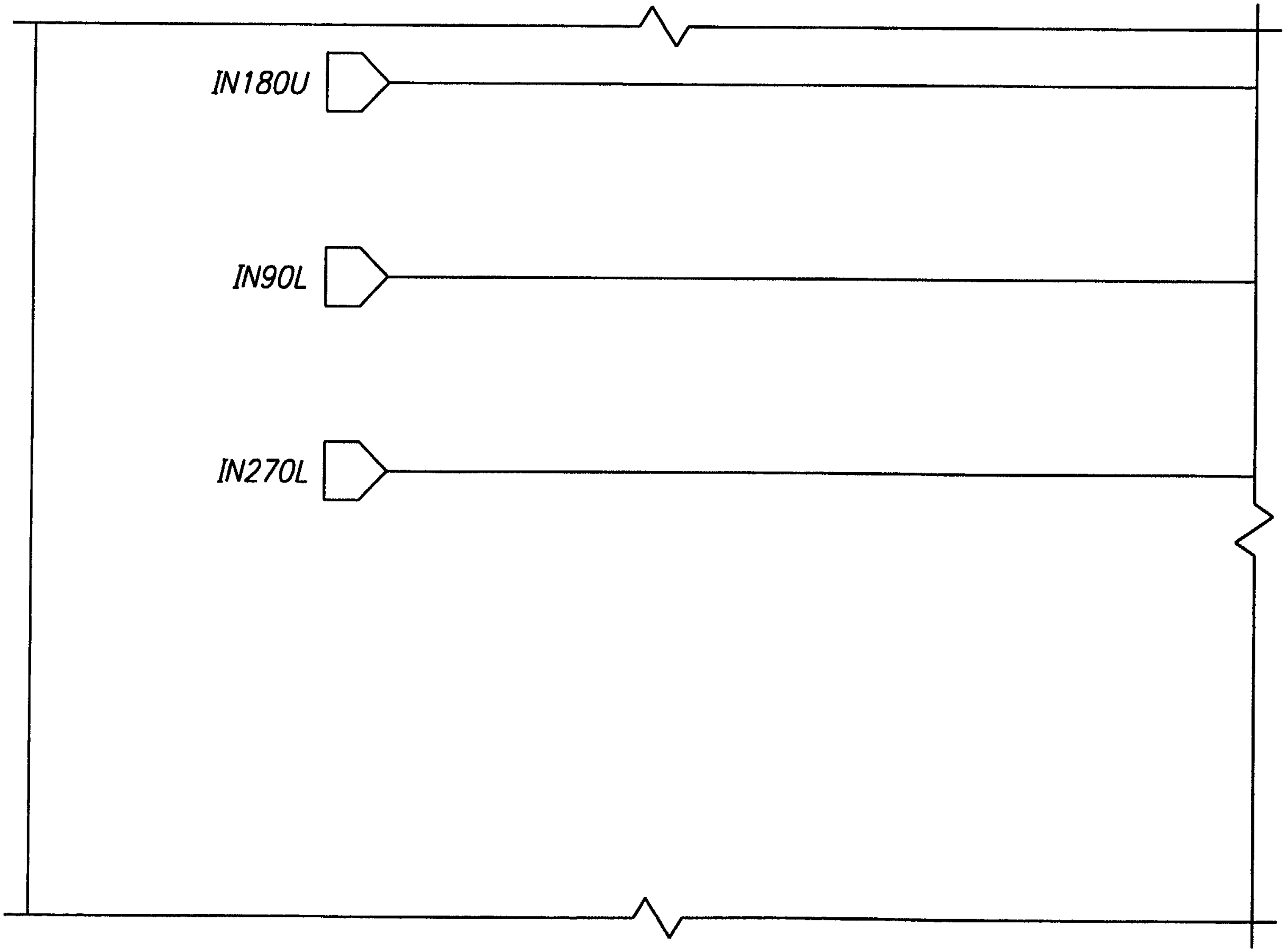


Fig 8.0606EA

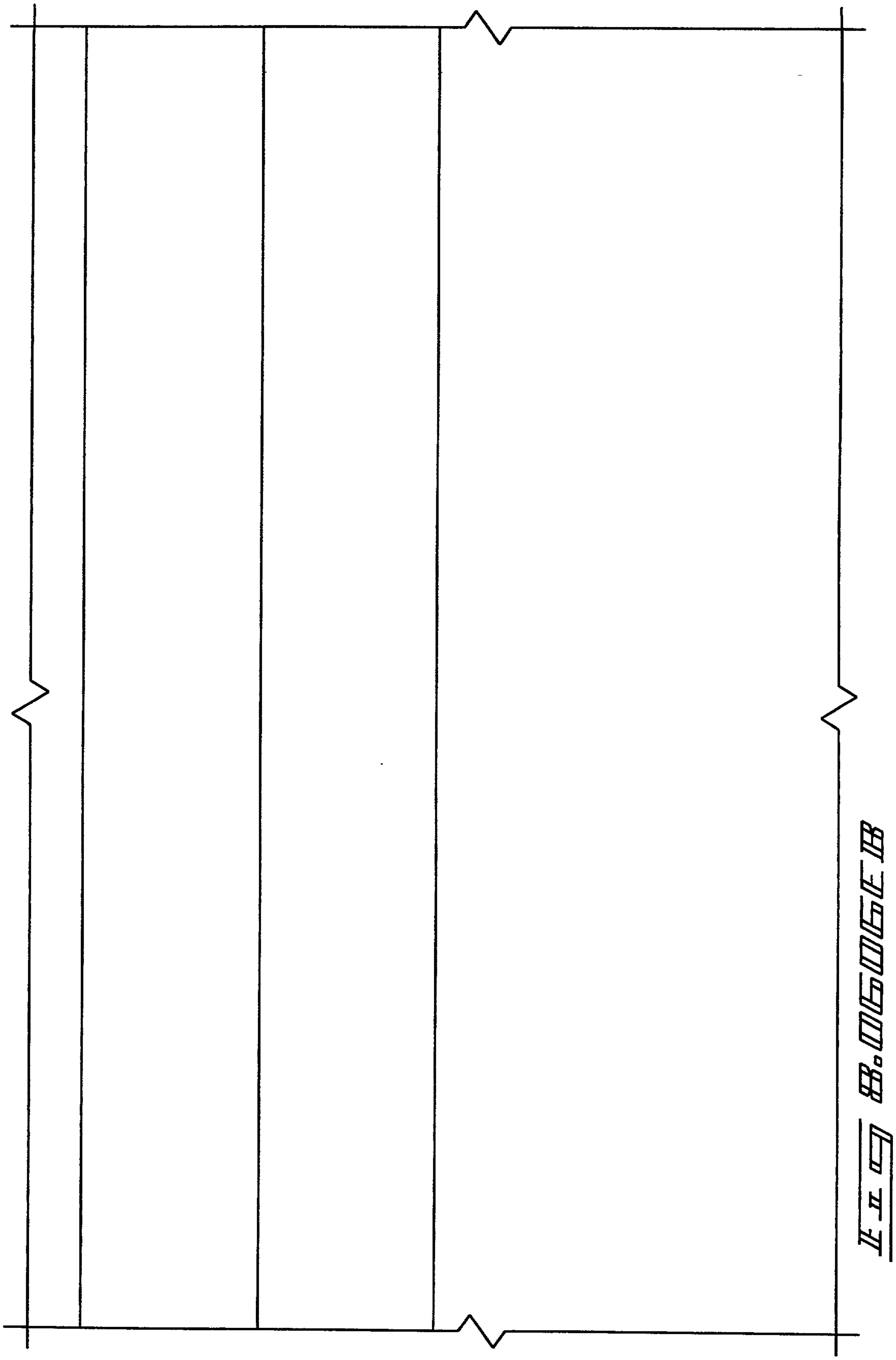


Fig 8.0606EB

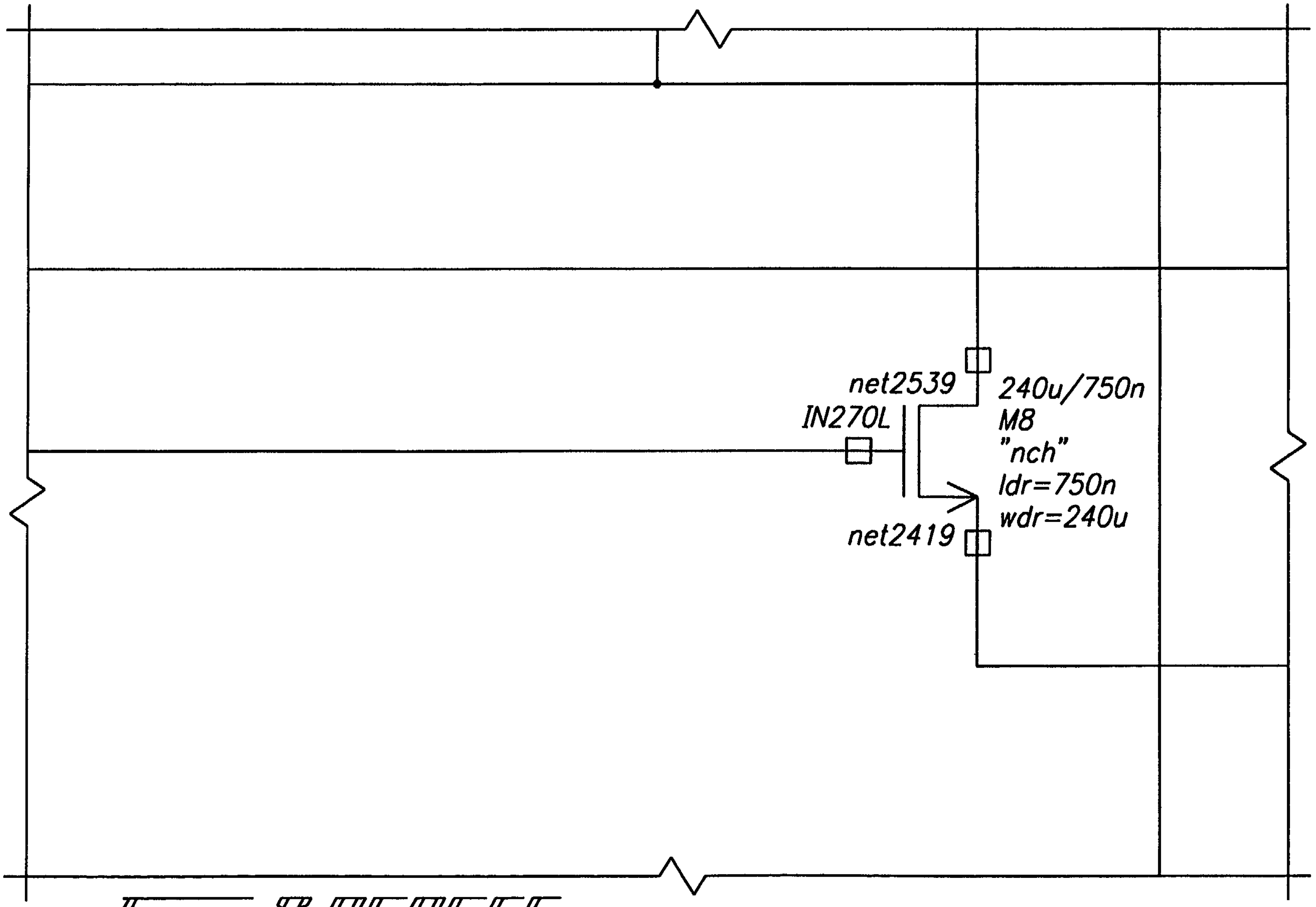


Fig 8.0606EC

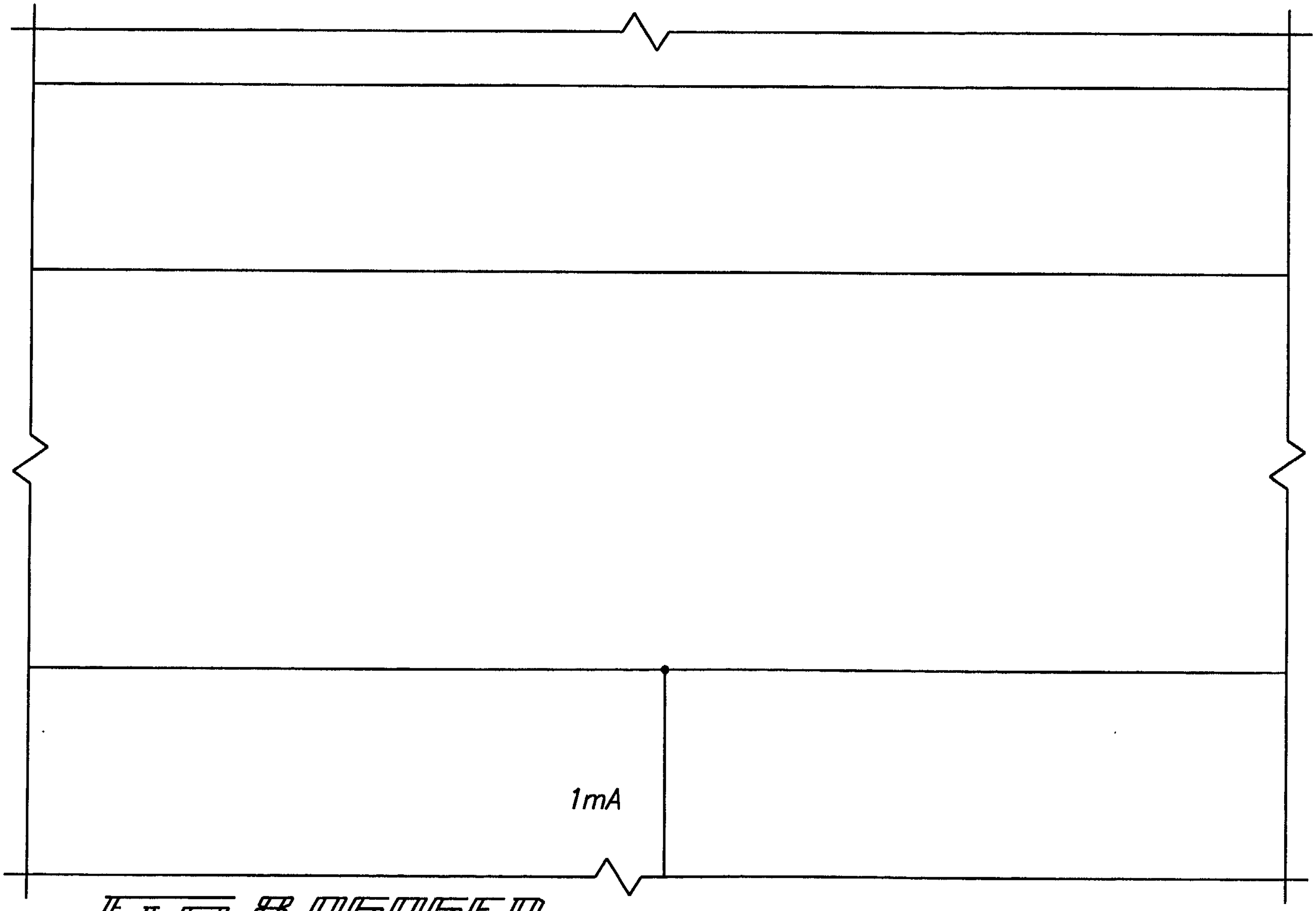


Fig 8.0606ED

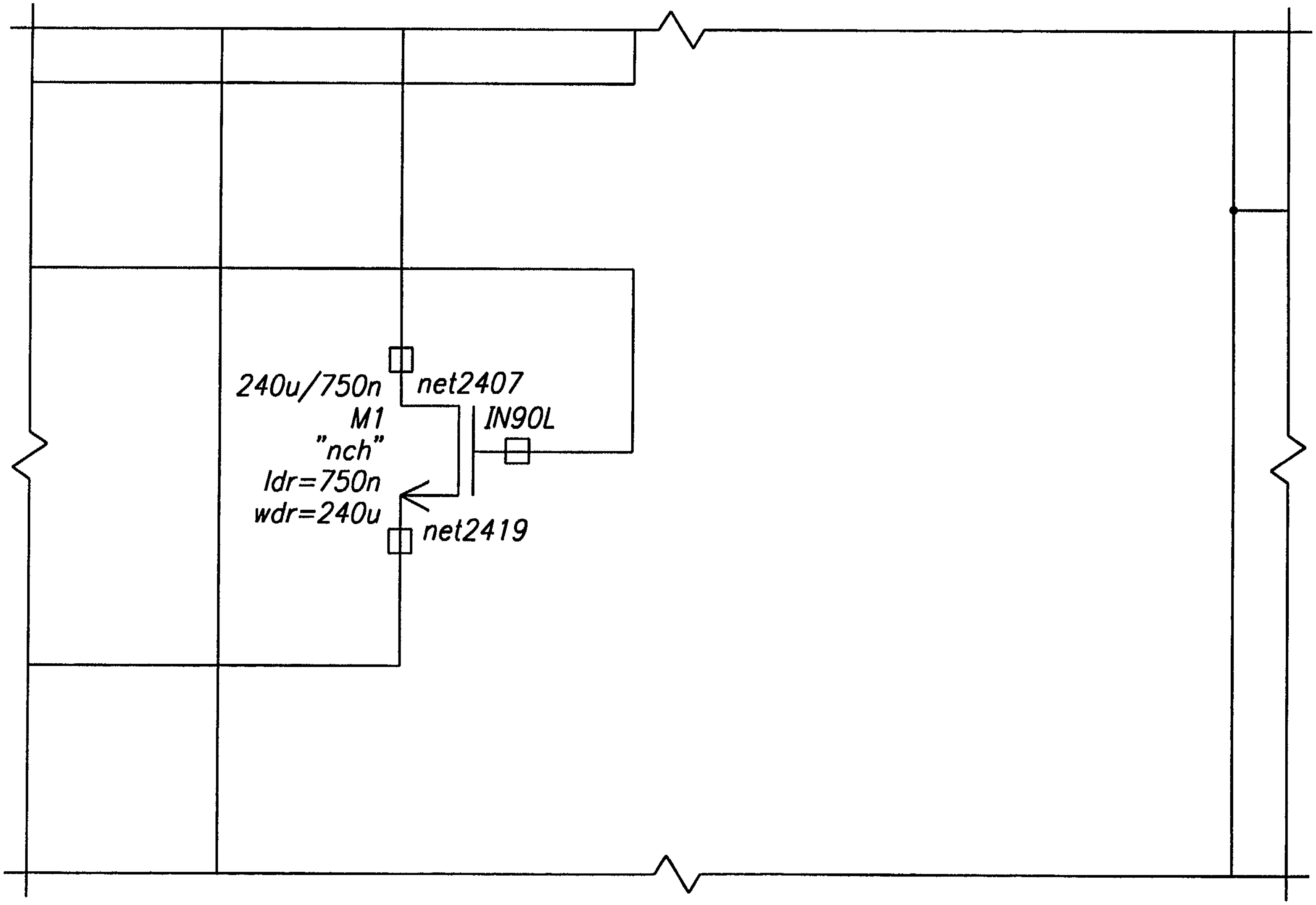


Fig 8.0606EE

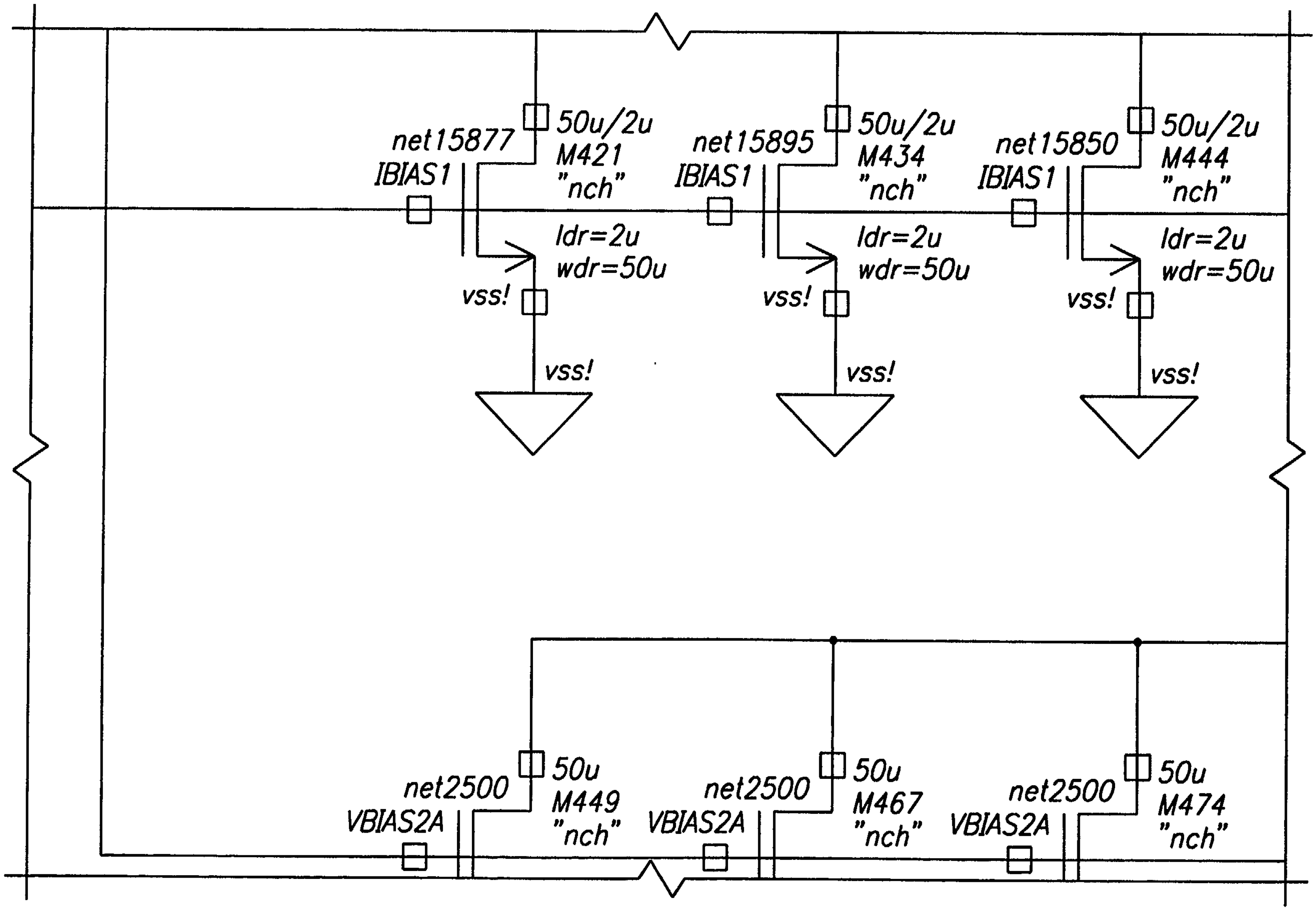
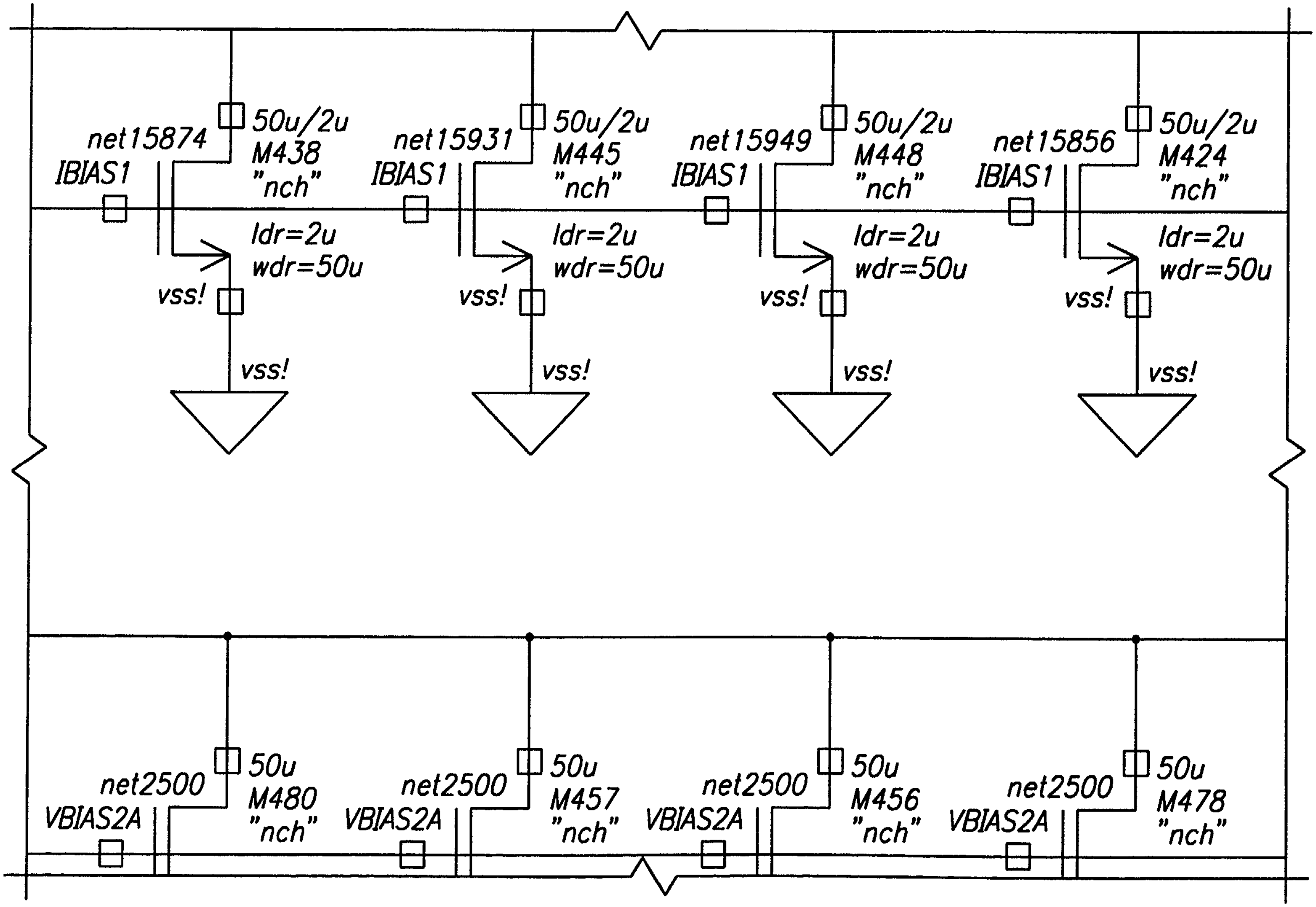

net15877
IBIAS1
50u/2u
M421
"nch"
ldr=2u
wdr=50u
vss!
vss!
net15895
IBIAS1
50u/2u
M434
"nch"
ldr=2u
wdr=50u
vss!
vss!
net15850
IBIAS1
50u/2u
M444
"nch"
ldr=2u
wdr=50u
vss!
vss!
net2500
VBIAS2A
50u
M449
"nch"
net2500
VBIAS2A
50u
M467
"nch"
net2500
VBIAS2A
50u
M474
"nch"

Fig 8.0G0GEF


net15874
IBIAS1
50u/2u
M438
"nch"
ldr=2u
wdr=50u
vss!
vss!
net15931
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M445
"nch"
ldr=2u
wdr=50u
vss!
vss!
net15949
IBIAS1
50u/2u
M448
"nch"
ldr=2u
wdr=50u
vss!
vss!
net15856
IBIAS1
50u/2u
M424
"nch"
ldr=2u
wdr=50u
vss!
vss!
net2500
VBIAS2A
50u
M480
"nch"
net2500
VBIAS2A
50u
M457
"nch"
net2500
VBIAS2A
50u
M456
"nch"
net2500
VBIAS2A
50u
M478
"nch"

Fig 8.0606EG

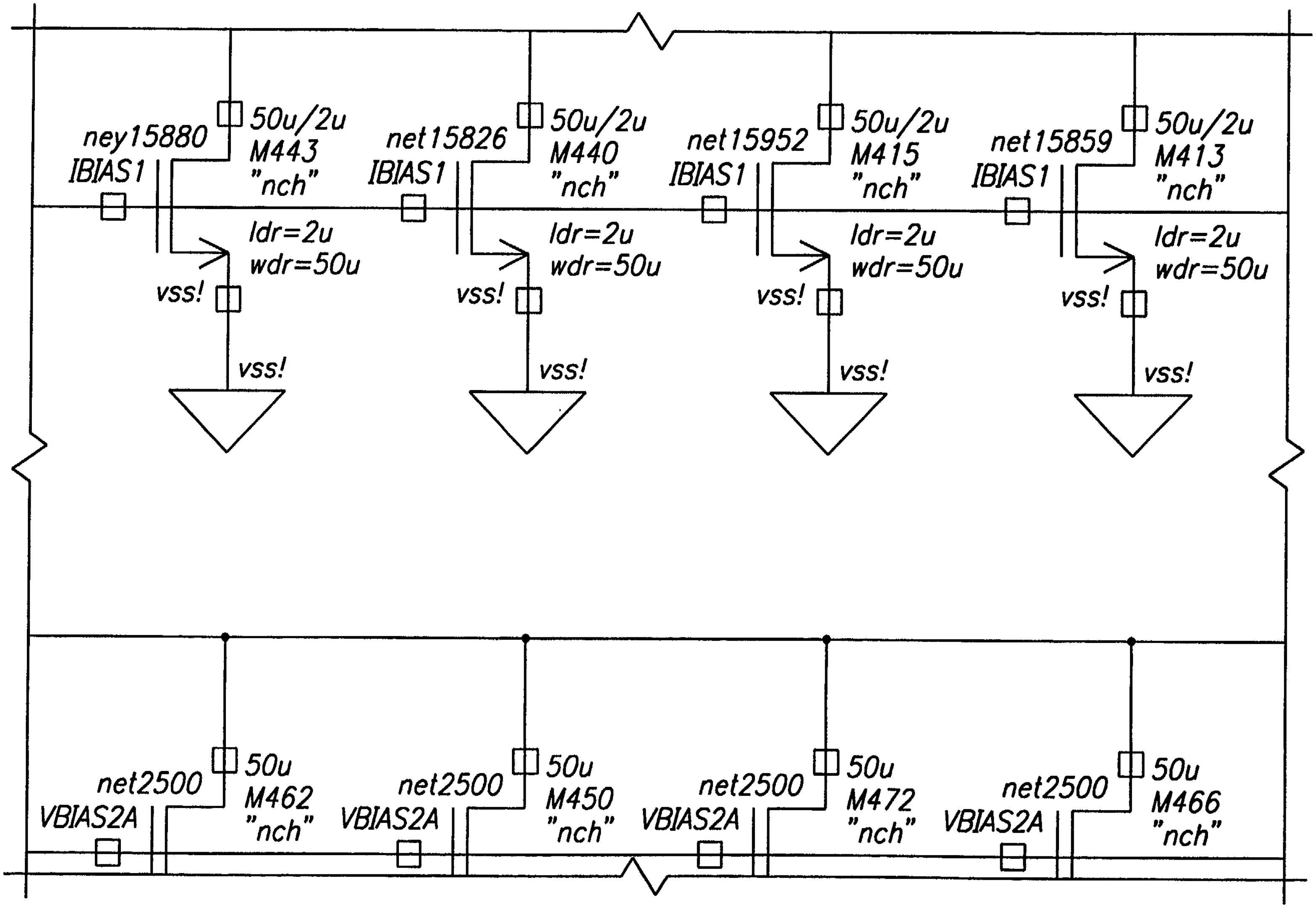

ney15880
IBIAS1
50u/2u
M443
"nch"
ldr=2u
wdr=50u
vss!
vss!
net15826
IBIAS1
50u/2u
M440
"nch"
ldr=2u
wdr=50u
vss!
vss!
net15952
IBIAS1
50u/2u
M415
"nch"
ldr=2u
wdr=50u
vss!
vss!
net15859
IBIAS1
50u/2u
M413
"nch"
ldr=2u
wdr=50u
vss!
vss!
net2500
VBIAS2A
50u
M462
"nch"
net2500
VBIAS2A
50u
M450
"nch"
net2500
VBIAS2A
50u
M472
"nch"
net2500
VBIAS2A
50u
M466
"nch"

Fig 8.0606EH

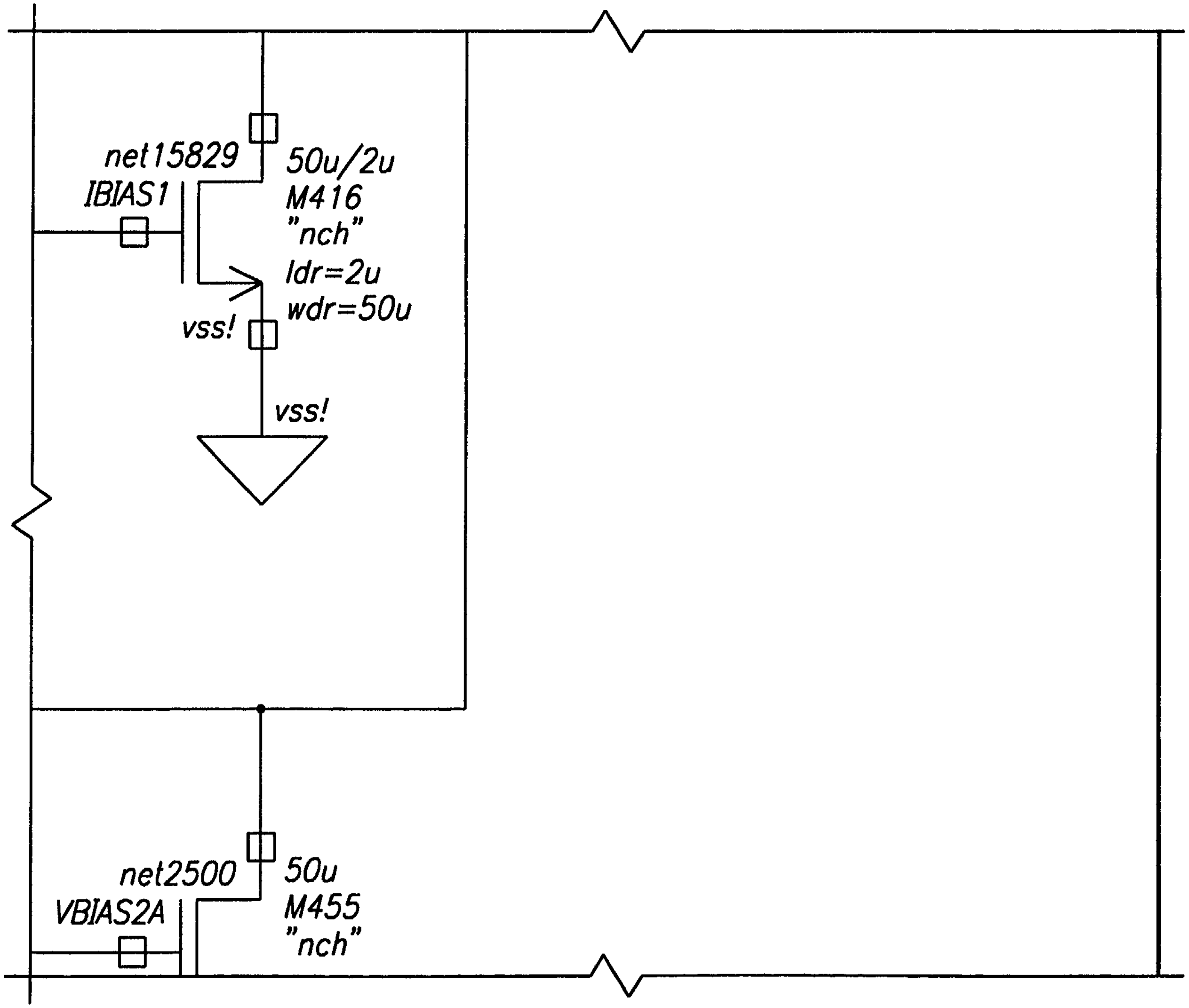

net15829
IBIAS1
50u/2u
M416
"nch"
ldr=2u
wdr=50u
vss!
vss!
net2500
VBIAS2A
50u
M455
"nch"

Fig 8.0606EI

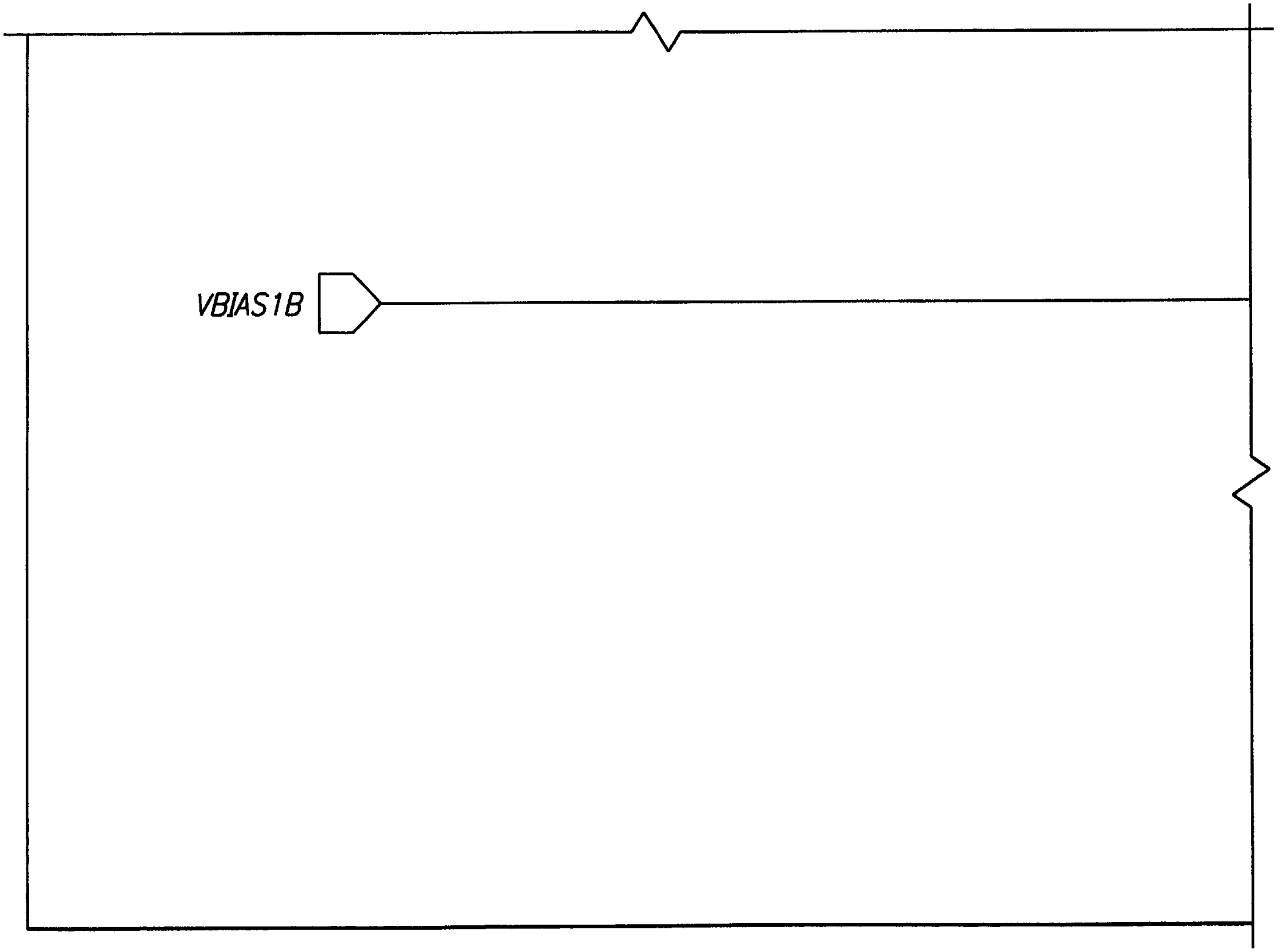


Fig 8.0606FA

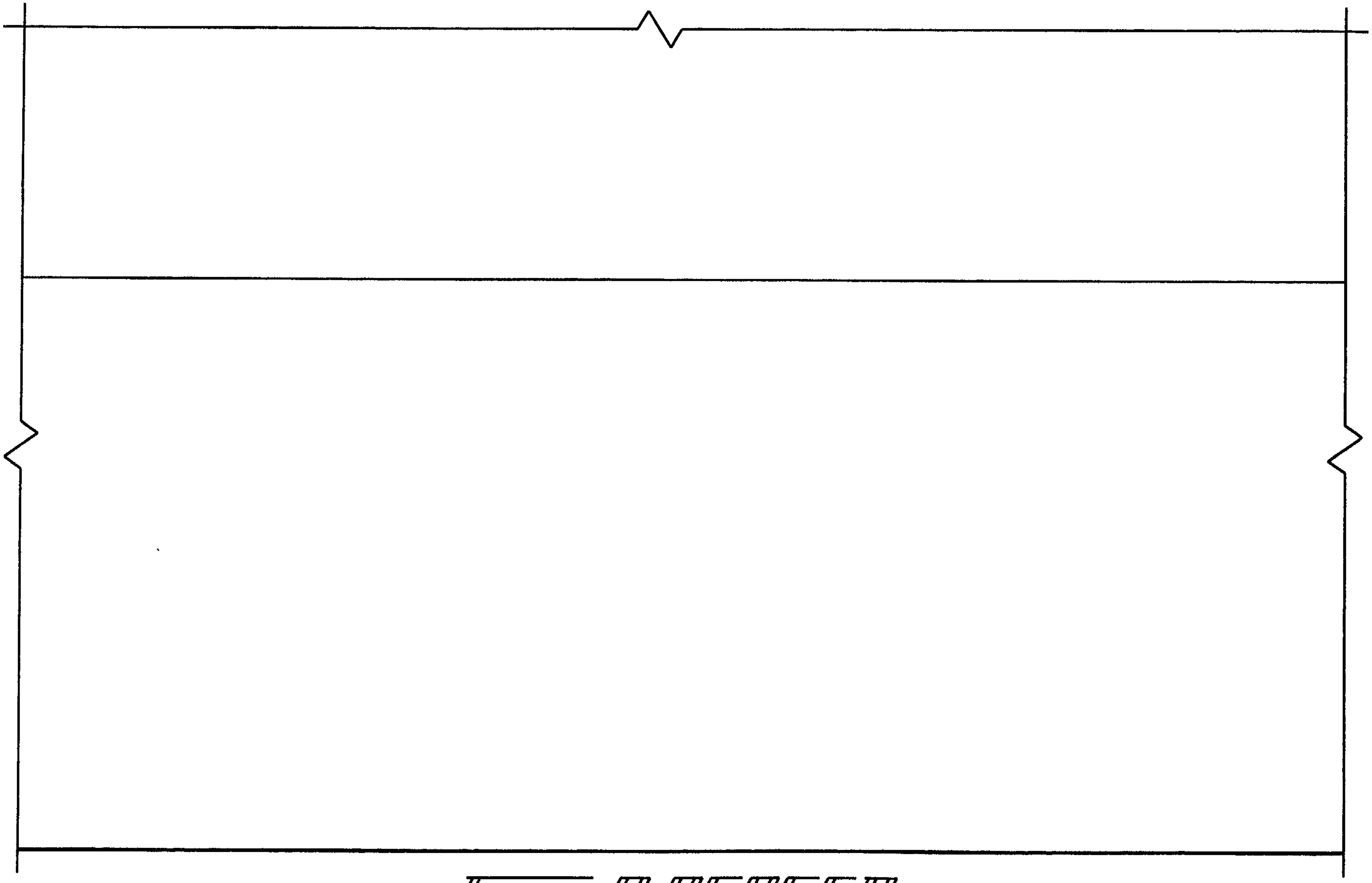


Fig 8.0606FB

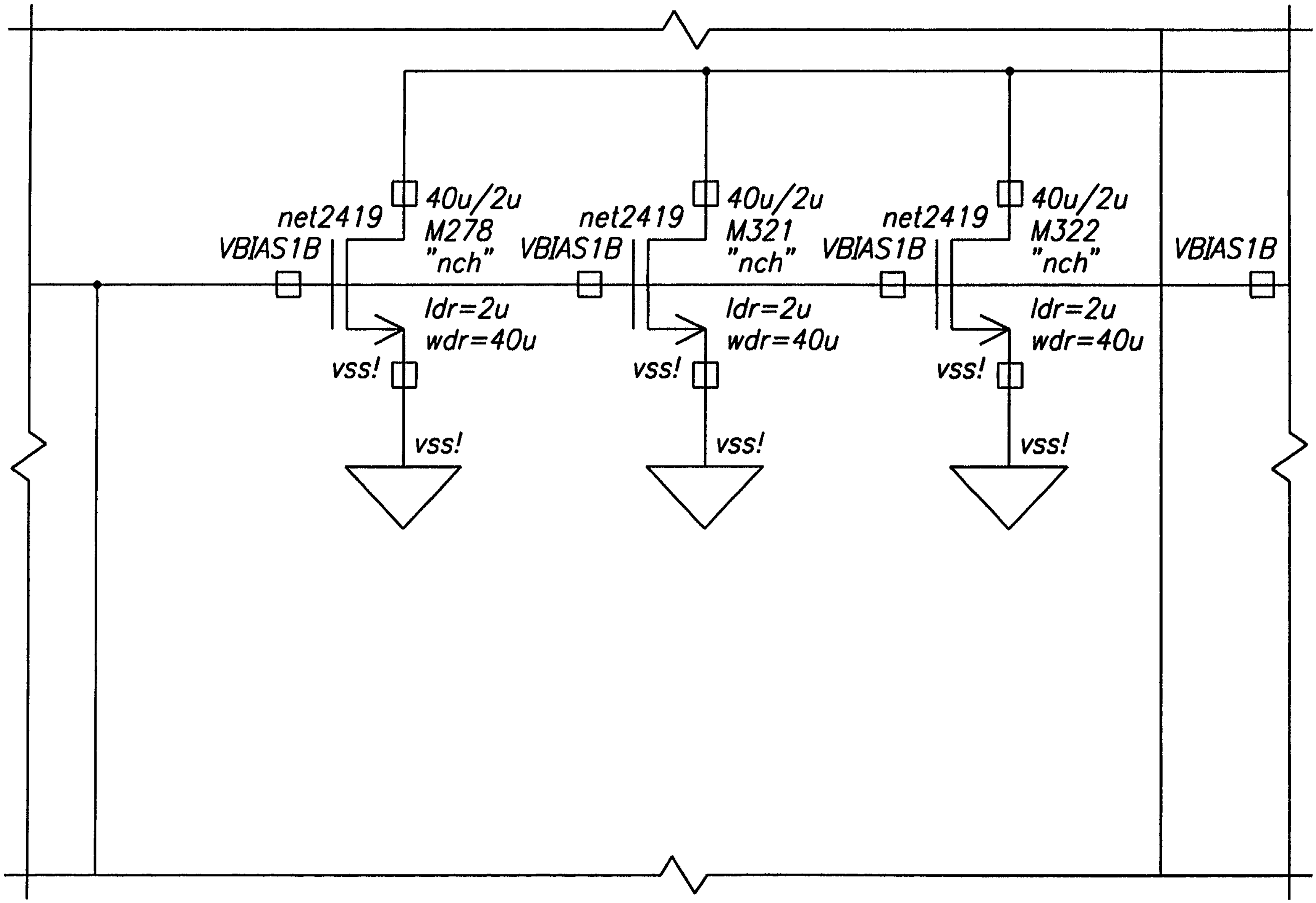

VBIAS1B
net2419
40u/2u
M278
"nch"
ldr=2u
wdr=40u
vss!
vss!
VBIAS1B
net2419
40u/2u
M321
"nch"
ldr=2u
wdr=40u
vss!
vss!
VBIAS1B
net2419
40u/2u
M322
"nch"
ldr=2u
wdr=40u
vss!
vss!
VBIAS1B

Fig. 8.0606FC

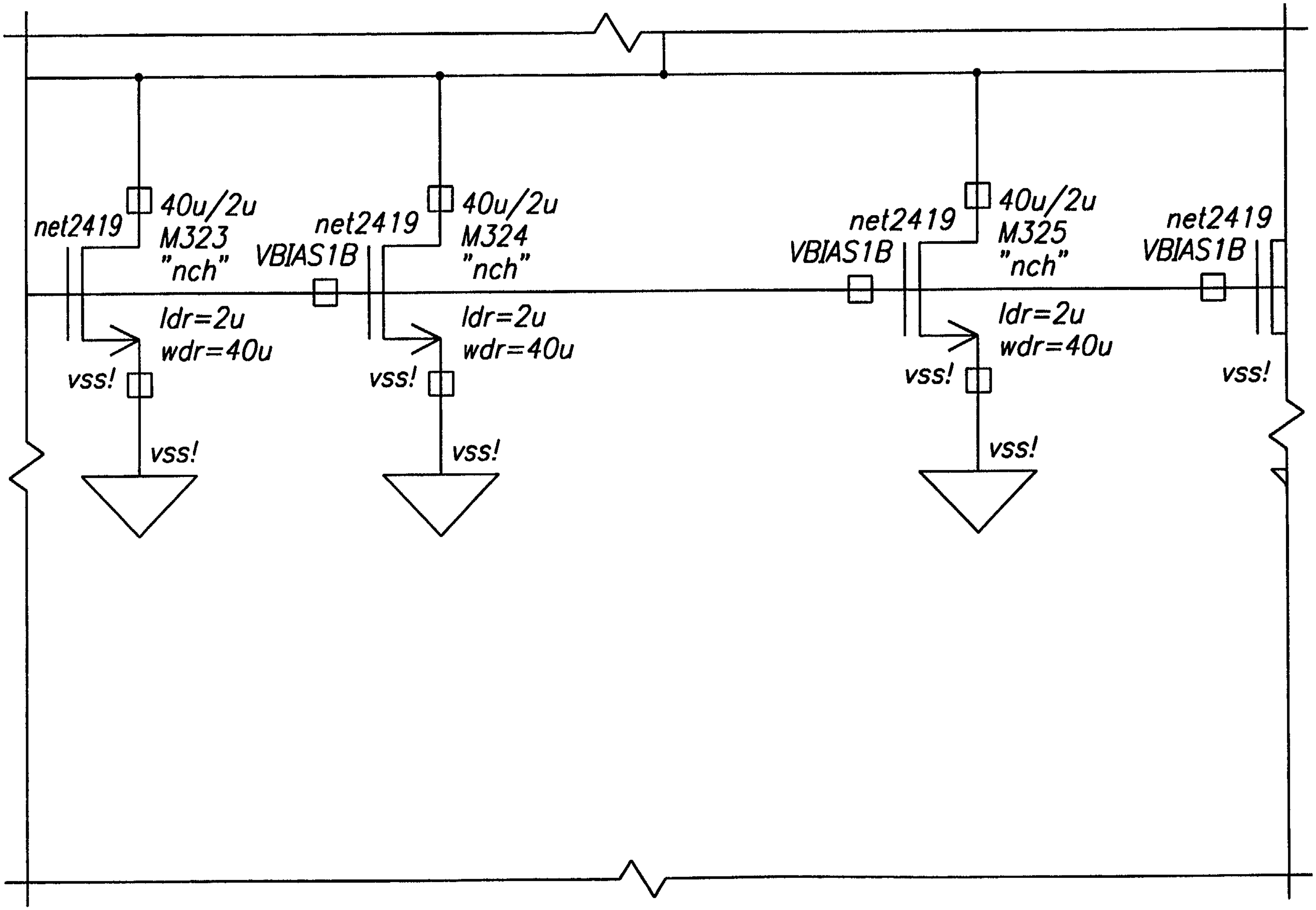
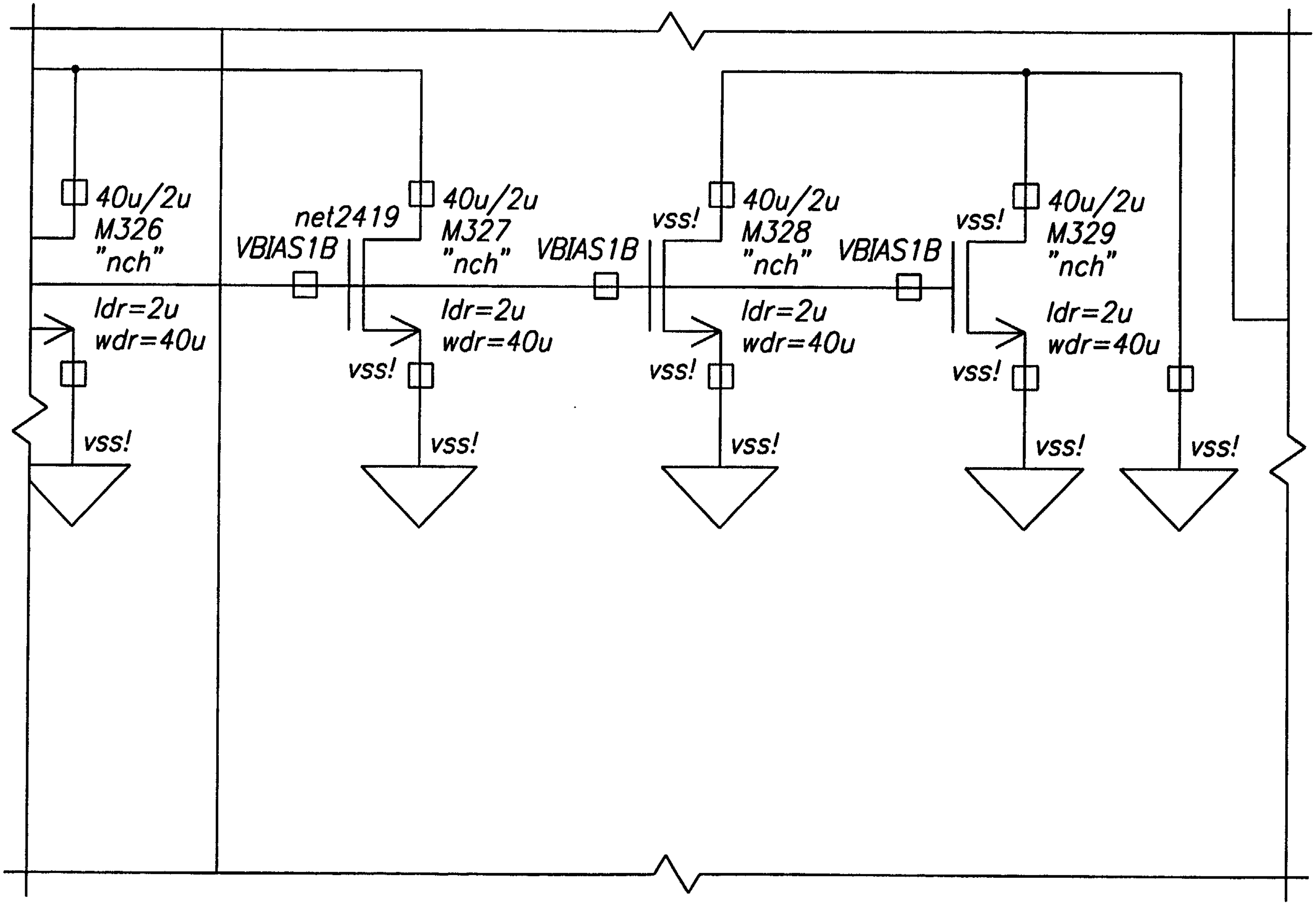

net2419
40u/2u
M323
"nch"
ldr=2u
wdr=40u
vss!
vss!
net2419
VBIAS1B
40u/2u
M324
"nch"
ldr=2u
wdr=40u
vss!
vss!
net2419
VBIAS1B
40u/2u
M325
"nch"
ldr=2u
wdr=40u
vss!
vss!
net2419
VBIAS1B
vss!

Fig 8.0606FD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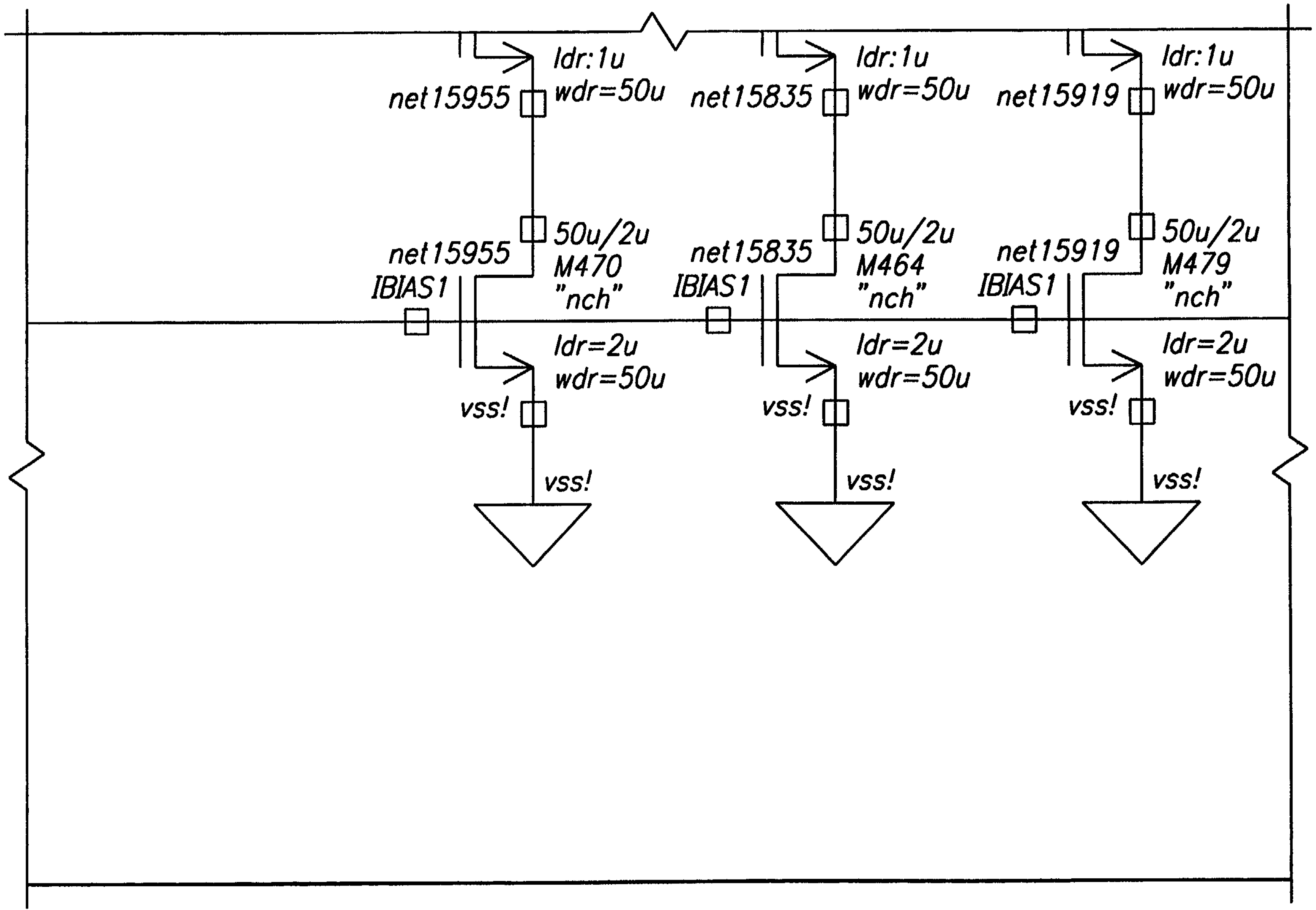
M326
"nch"
ldr=2u
wdr=40u
vss!
net2419
VBIAS1B
40u/2u
M327
"nch"
ldr=2u
wdr=40u
vss!
vss!
VBIAS1B
vss!
40u/2u
M328
"nch"
ldr=2u
wdr=40u
vss!
vss!
VBIAS1B
vss!
40u/2u
M329
"nch"
ldr=2u
wdr=40u
vss!
vss!
vss!

Fig 8.0606FE


ldr:1u
wdr=50u
net15955
50u/2u
M470
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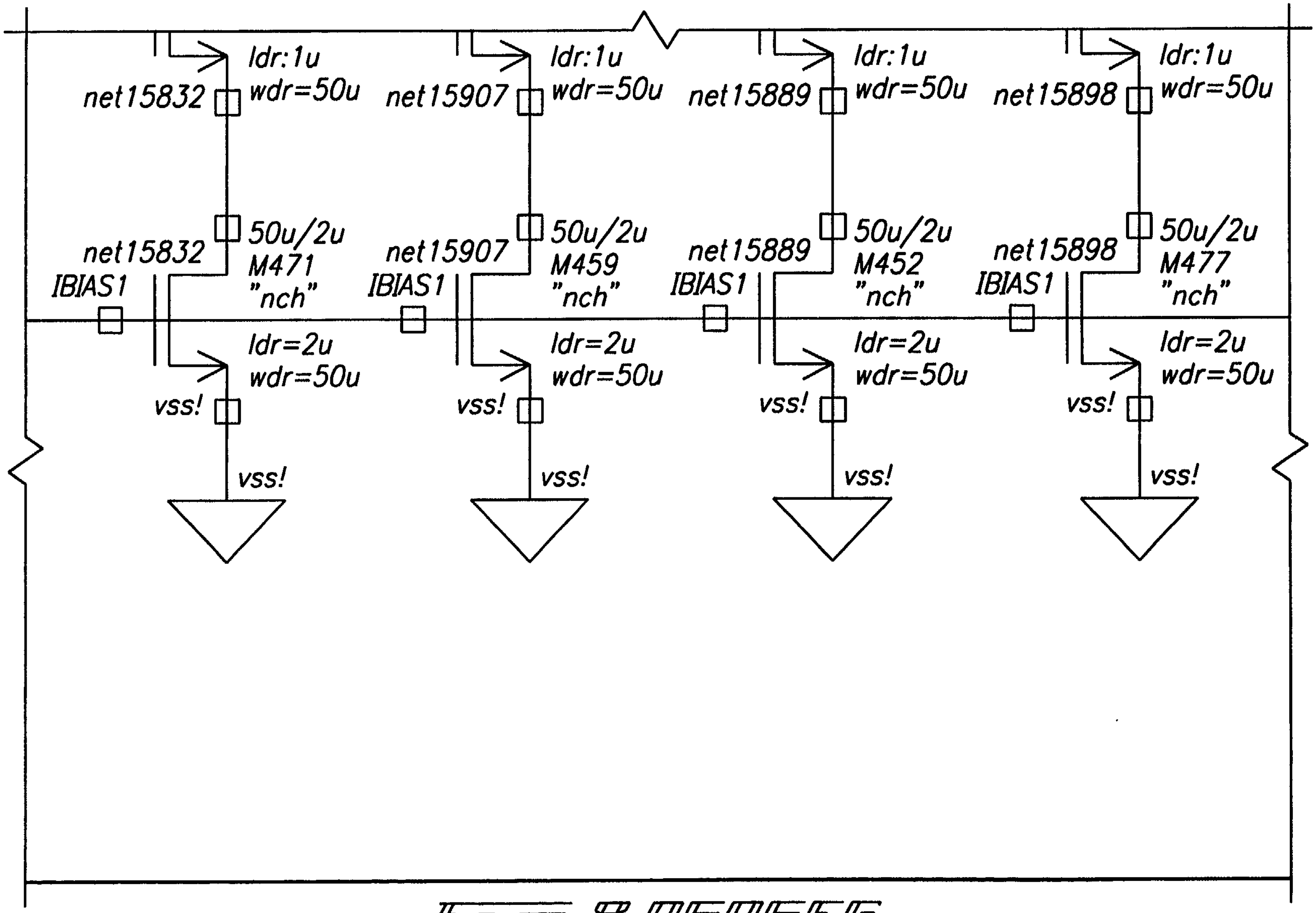
net15955
IBIAS1
ldr=2u
wdr=50u
vss!
vss!
ldr:1u
wdr=50u
net15835
50u/2u
M464
"nch"
net15835
IBIAS1
ldr=2u
wdr=50u
vss!
vss!
ldr:1u
wdr=50u
net15919
50u/2u
M479
"nch"
net15919
IBIAS1
ldr=2u
wdr=50u
vss!
vss!

Fig 8.0606FF


ldr:1u
wdr=50u
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50u/2u
M471
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net15832
IBIAS1
ldr=2u
wdr=50u
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vss!
ldr:1u
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net15907
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M459
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IBIAS1
ldr=2u
wdr=50u
vss!
vss!
ldr:1u
wdr=50u
net15889
50u/2u
M452
"nch"
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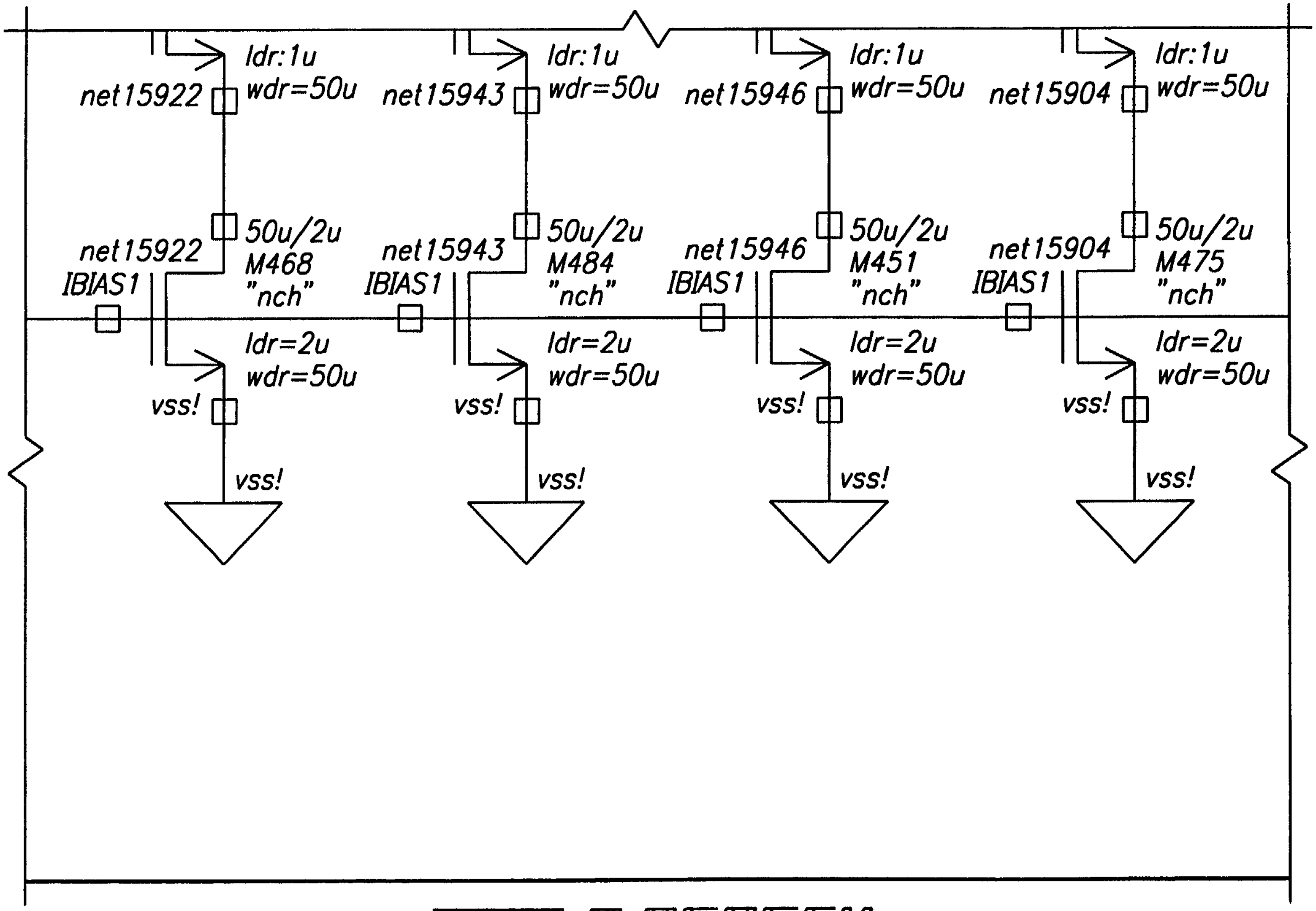
IBIAS1
ldr=2u
wdr=50u
vss!
vss!
ldr:1u
wdr=50u
net15898
50u/2u
M477
"nch"
net15898
IBIAS1
ldr=2u
wdr=50u
vss!
vss!

Fig 8.0606FG


ldr:1u
wdr=50u
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net15943
net15946
net15904
50u/2u
M468
M484
M451
M475
"nch"
IBIAS1
ldr=2u
wdr=50u
vss!

Fig 8.0606FH

09822063.061101

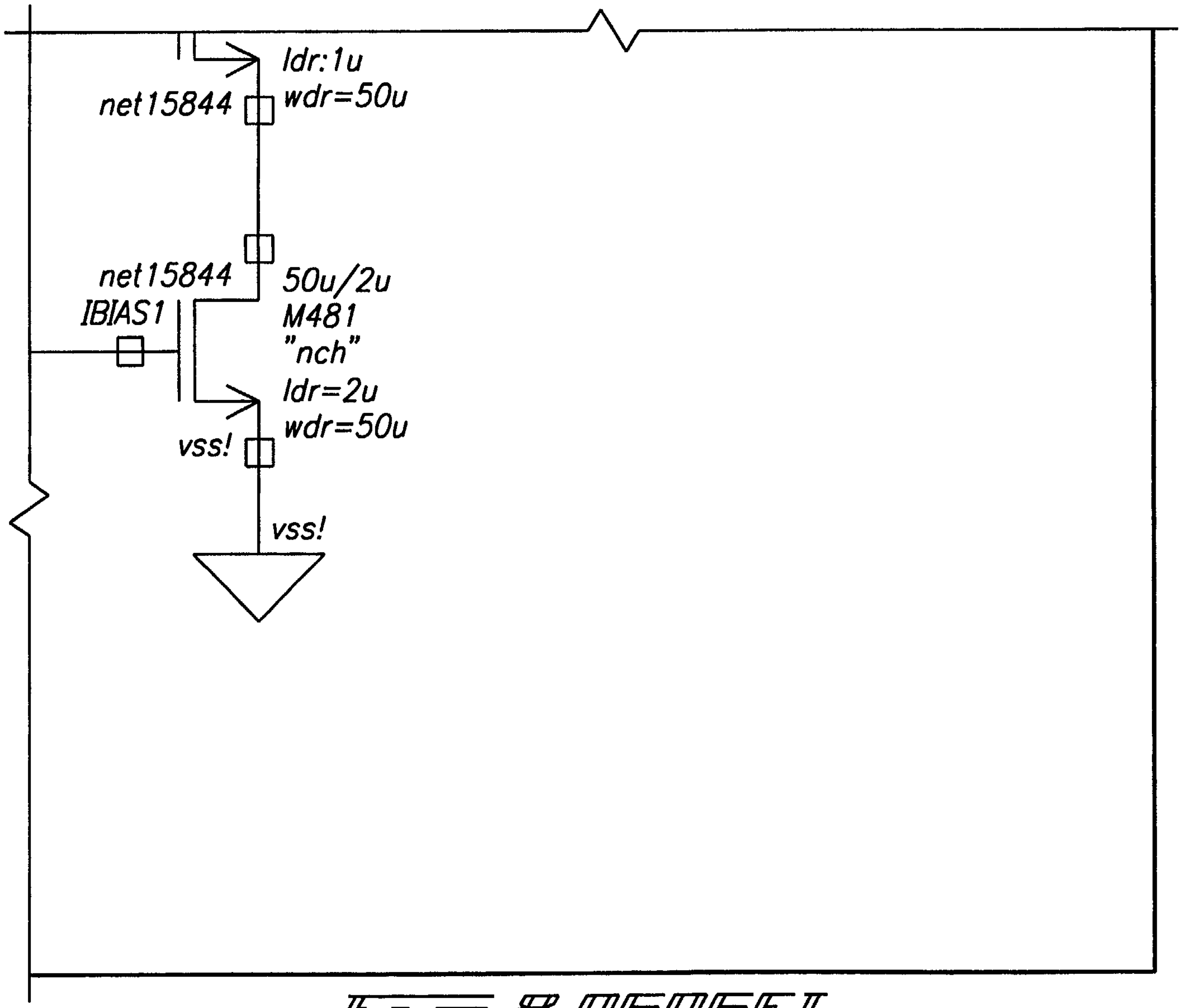


Fig 8.0606FI

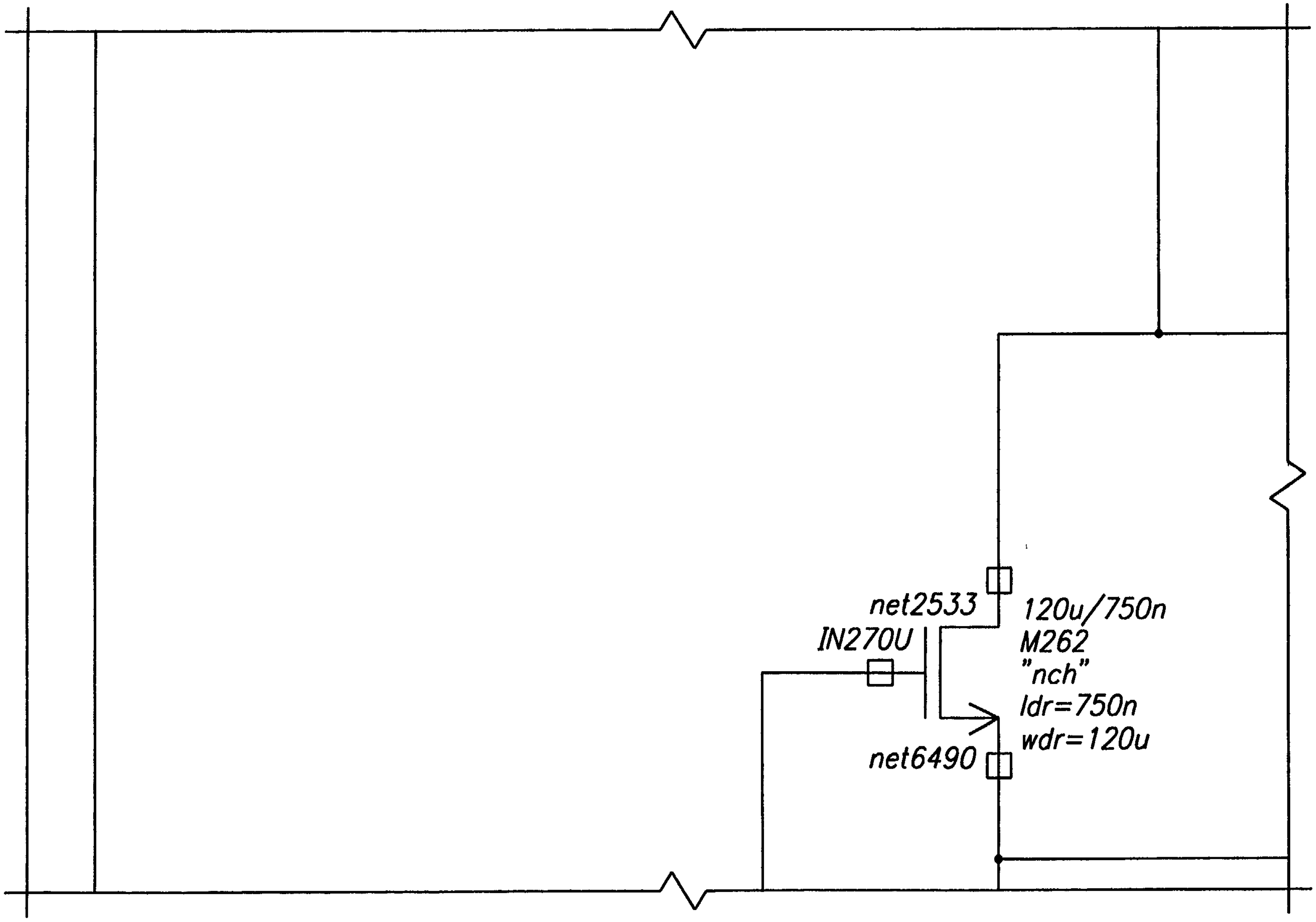
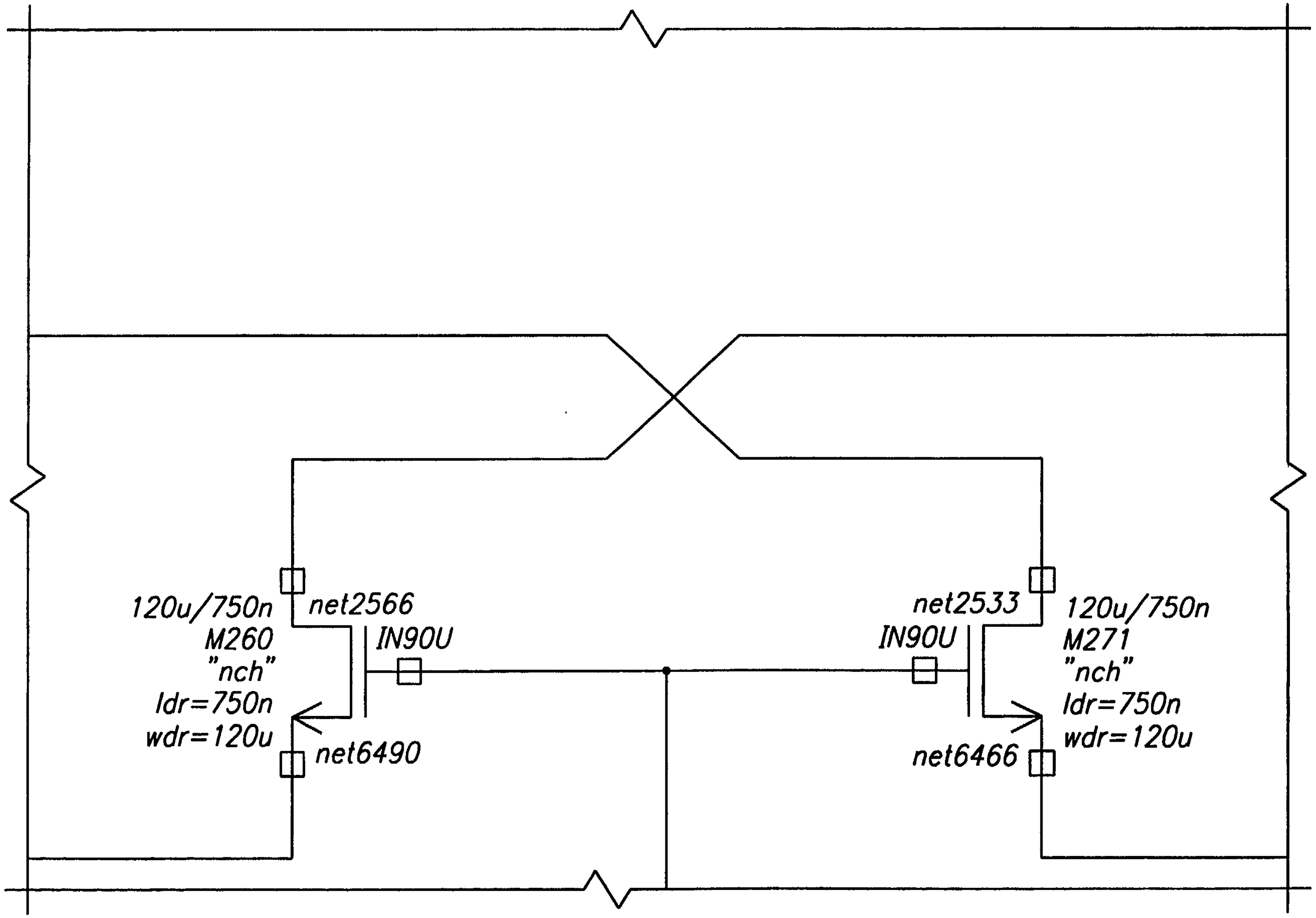


Fig 8.06066C


120u/750n
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"nch"
ldr=750n
wdr=120u
net2566
IN90U
net6490
net2533
IN90U
net6466
120u/750n
M271
"nch"
ldr=750n
wdr=120u

Fig 8.0606GD

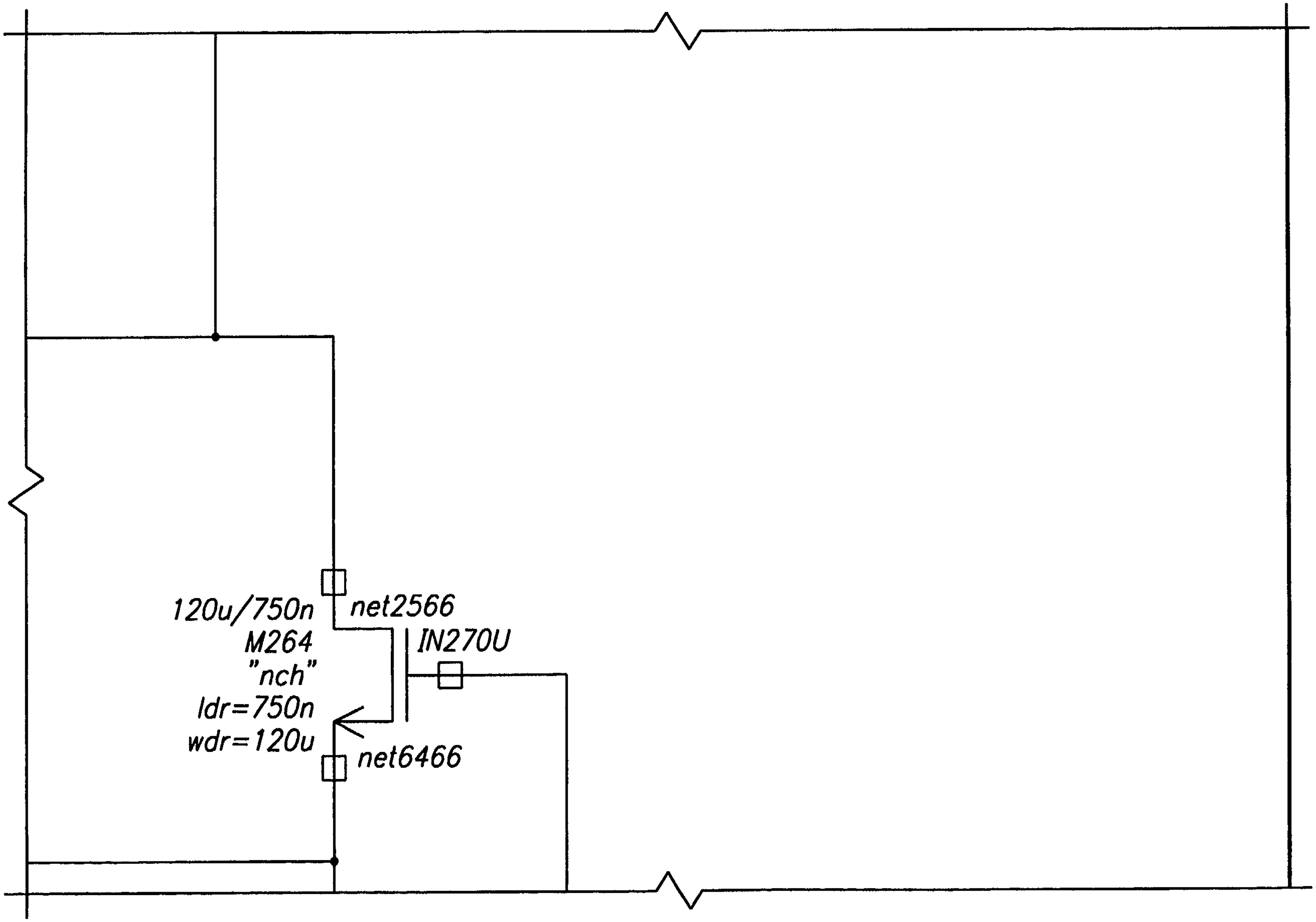


Fig 8.0606GE

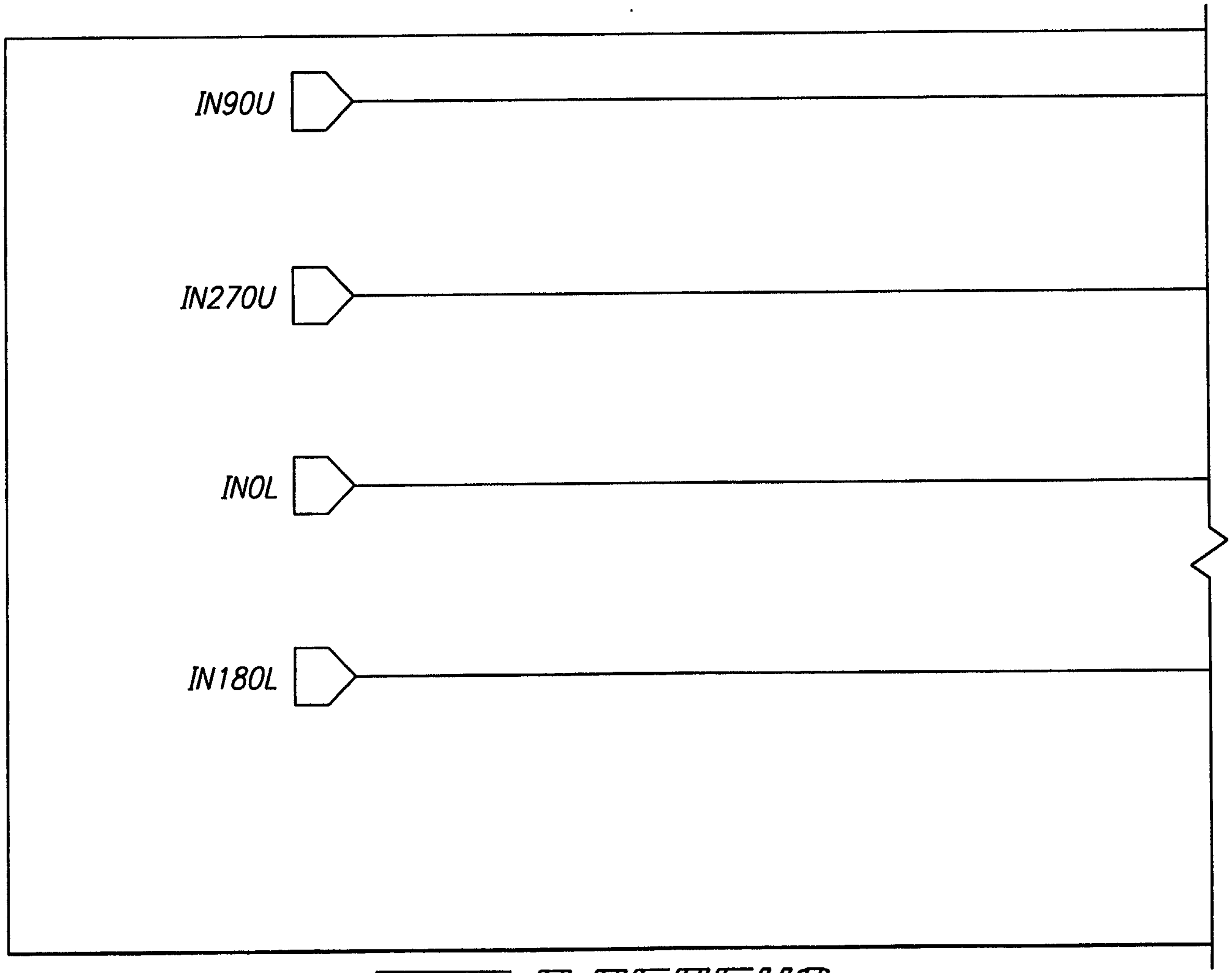


Fig 8.0606HA

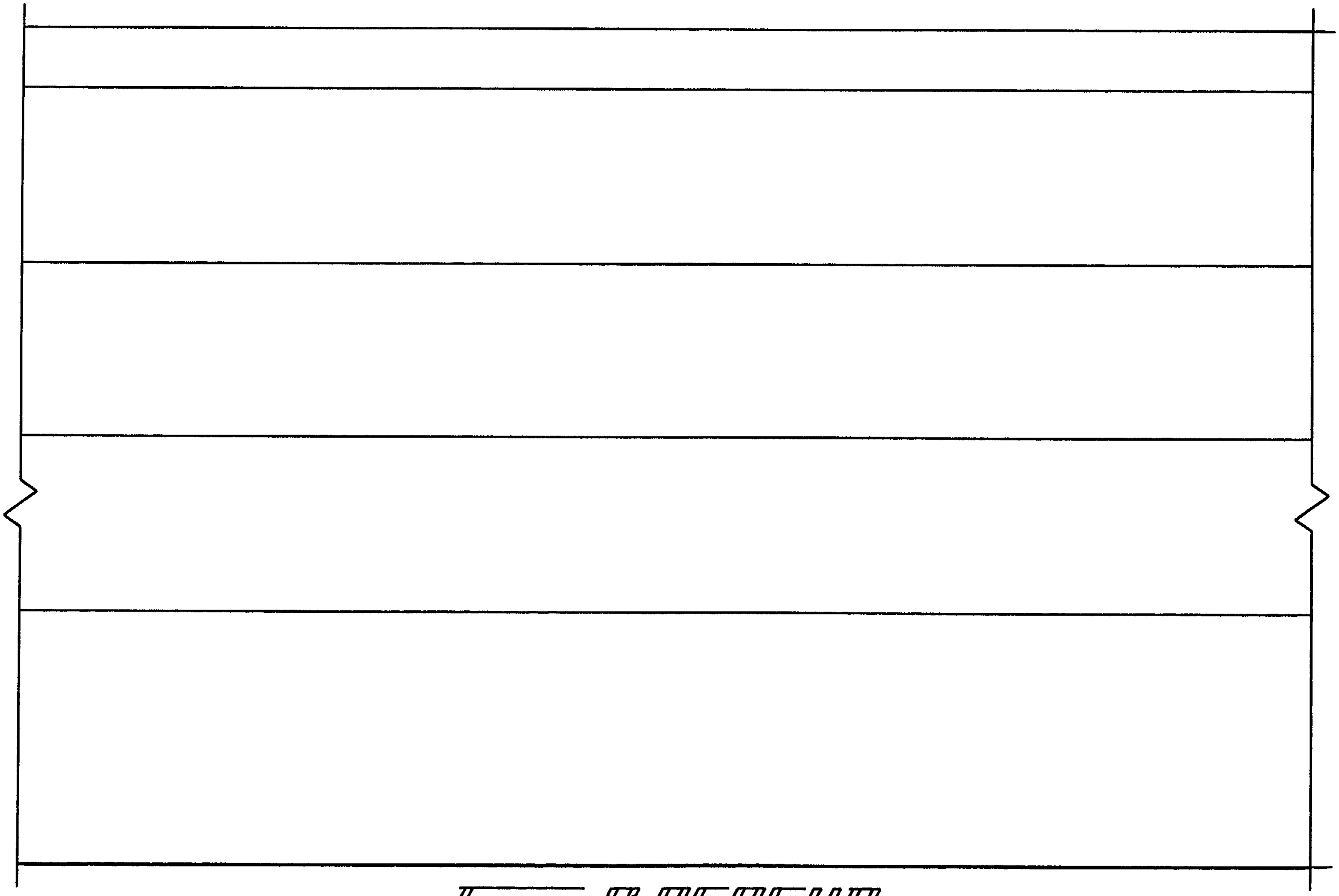


Fig 8.0606HB

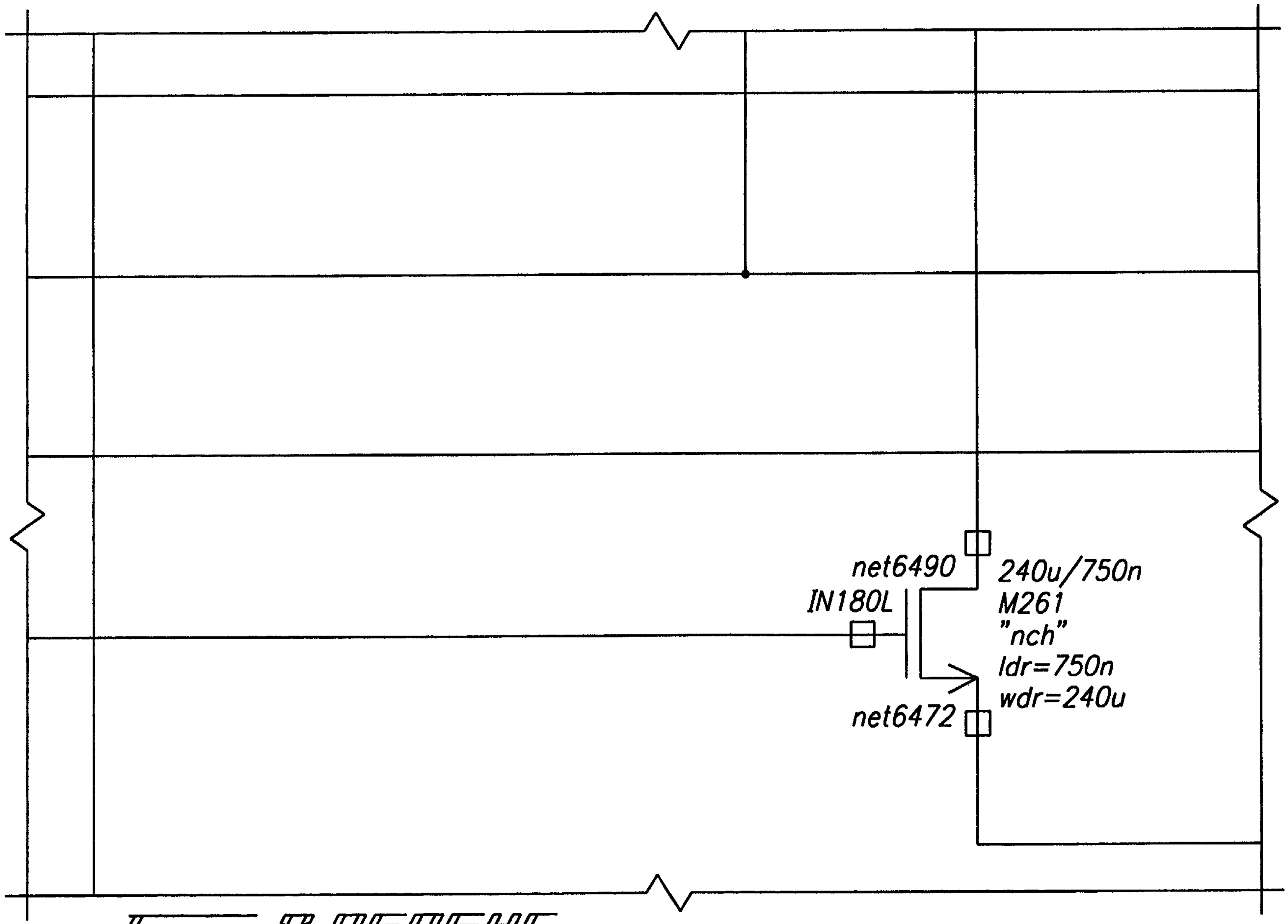


Fig 8.0606HC

2084/3273

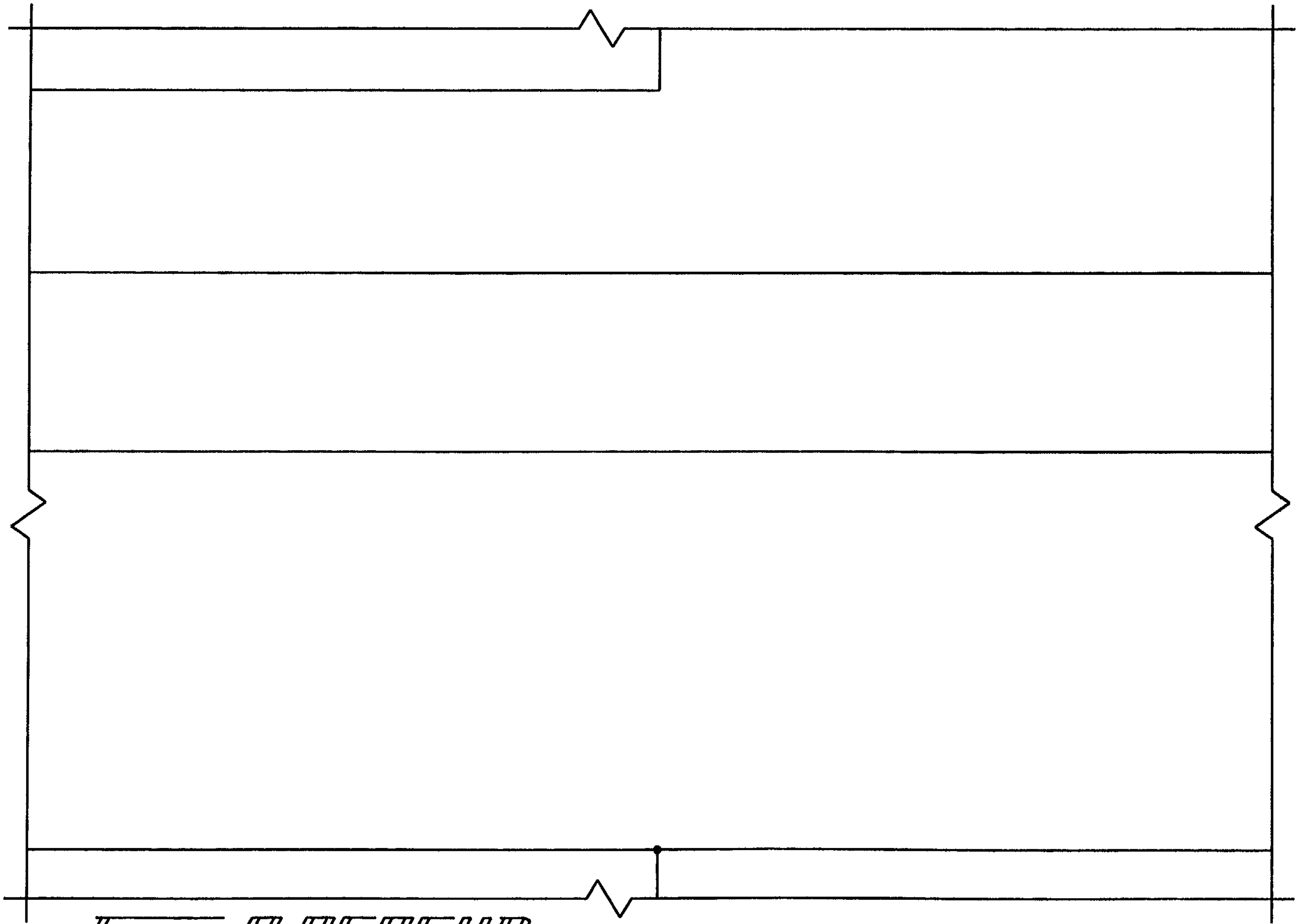


Fig 8.0606HD

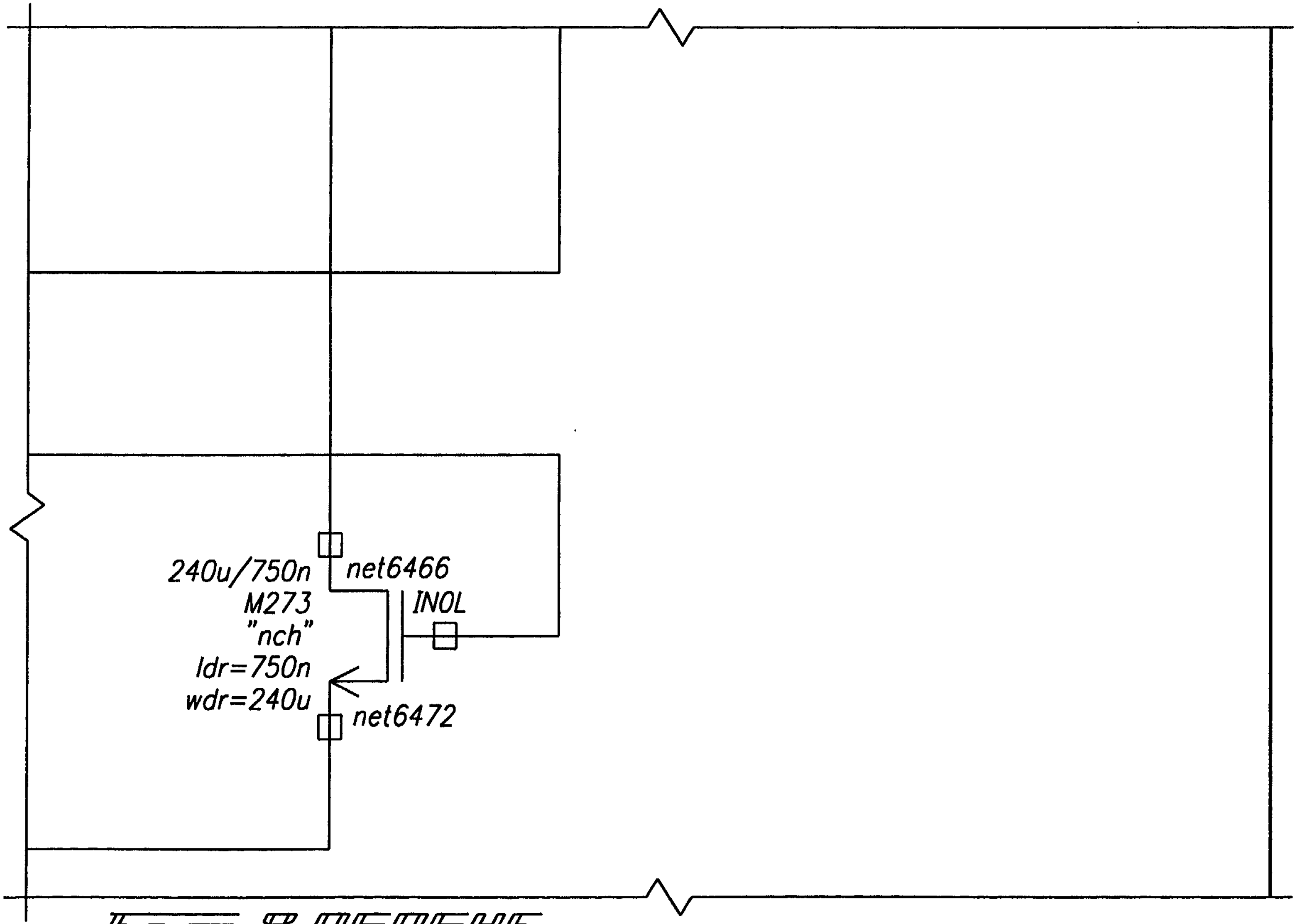


Fig 8.0606HE

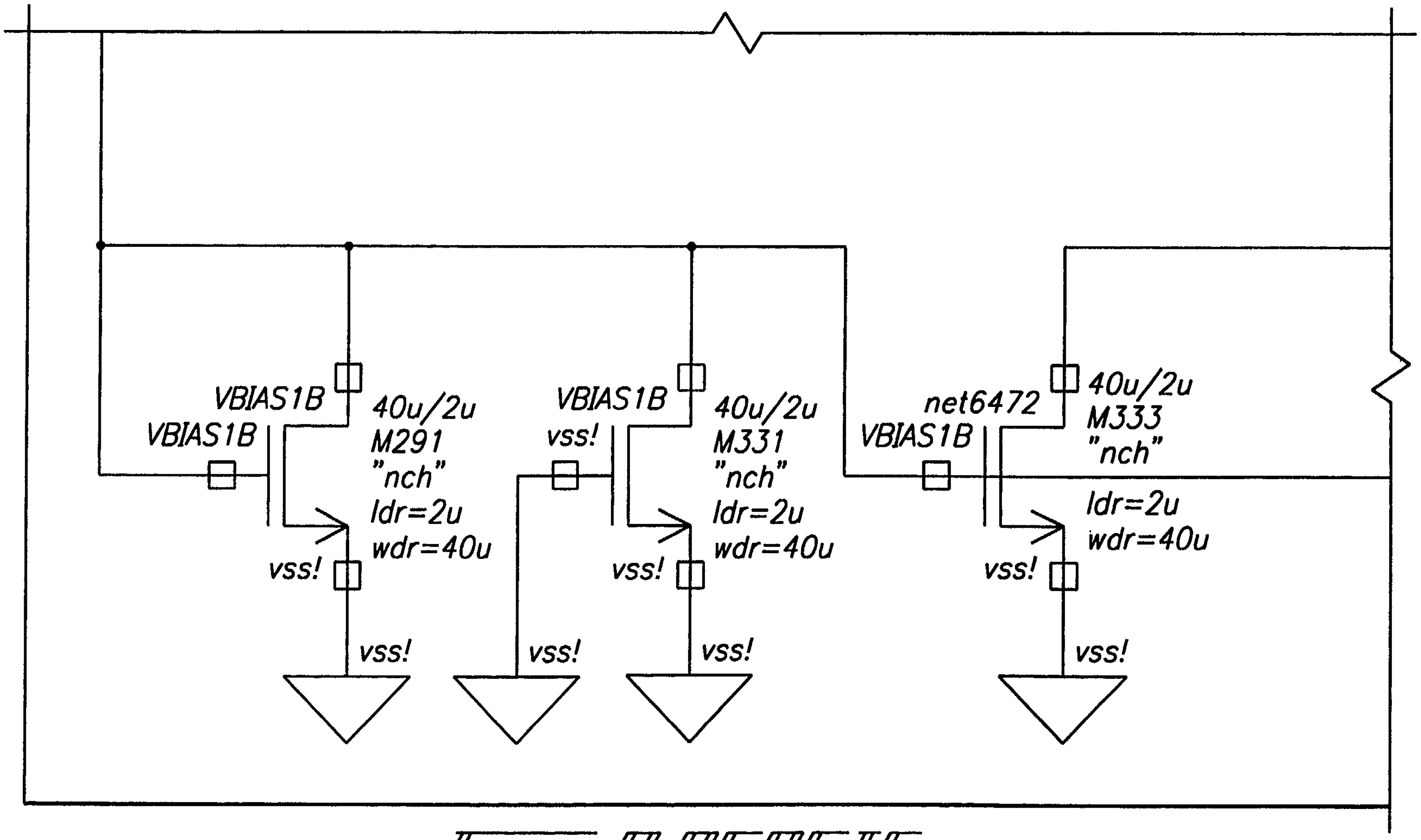

VBIAS1B
VBIAS1B
40u/2u
M291
"nch"
ldr=2u
wdr=40u
vss!
vss!
VBIAS1B
vss!
40u/2u
M331
"nch"
ldr=2u
wdr=40u
vss!
vss!
vss!
net6472
VBIAS1B
40u/2u
M333
"nch"
ldr=2u
wdr=40u
vss!
vss!

Fig 8.0606IC

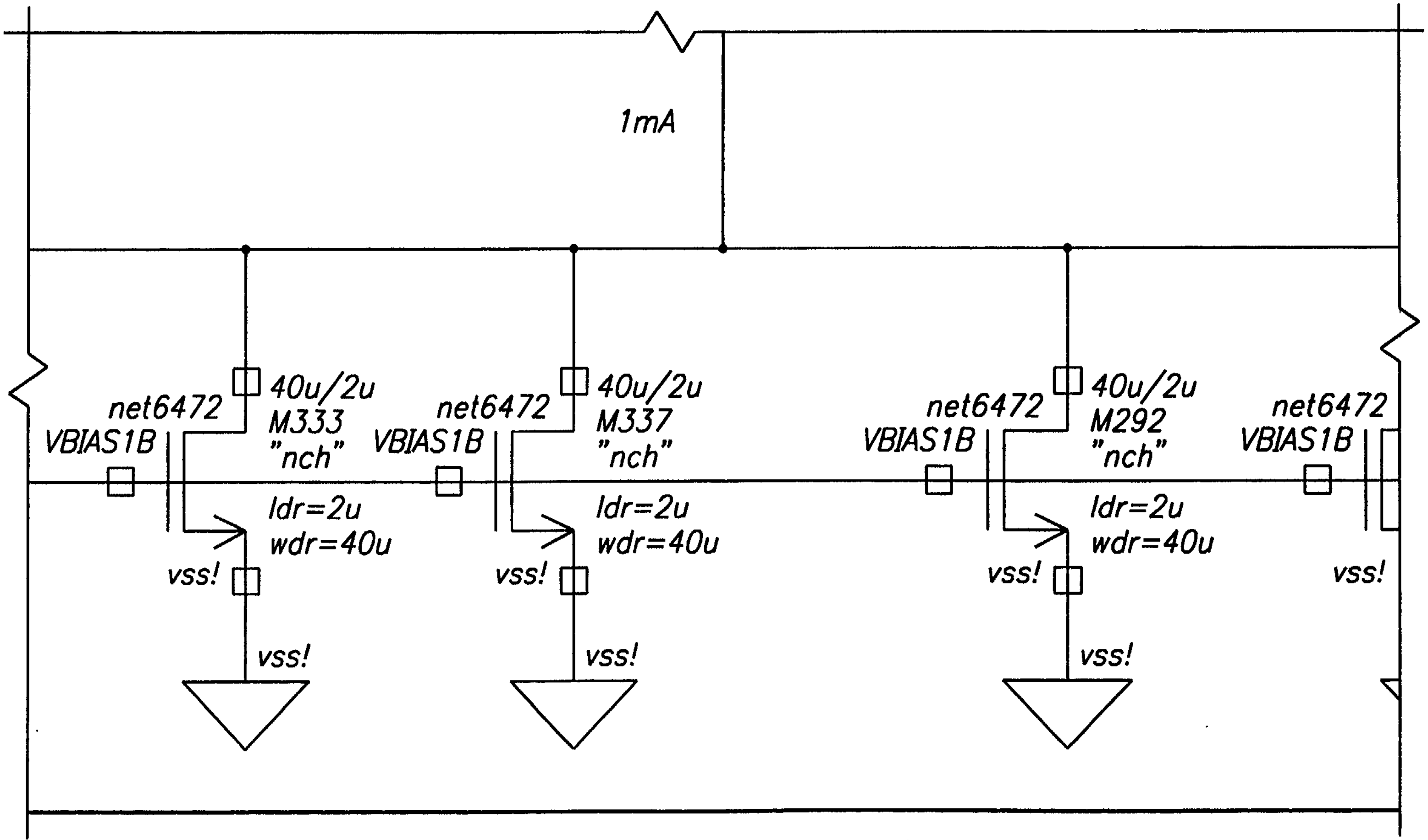

1mA
net6472
VBIAS1B
40u/2u
M333
"nch"
ldr=2u
wdr=40u
vss!
vss!
net6472
VBIAS1B
40u/2u
M337
"nch"
ldr=2u
wdr=40u
vss!
vss!
net6472
VBIAS1B
40u/2u
M292
"nch"
ldr=2u
wdr=40u
vss!
vss!
net6472
VBIAS1B
vss!

Fig 8.06061D

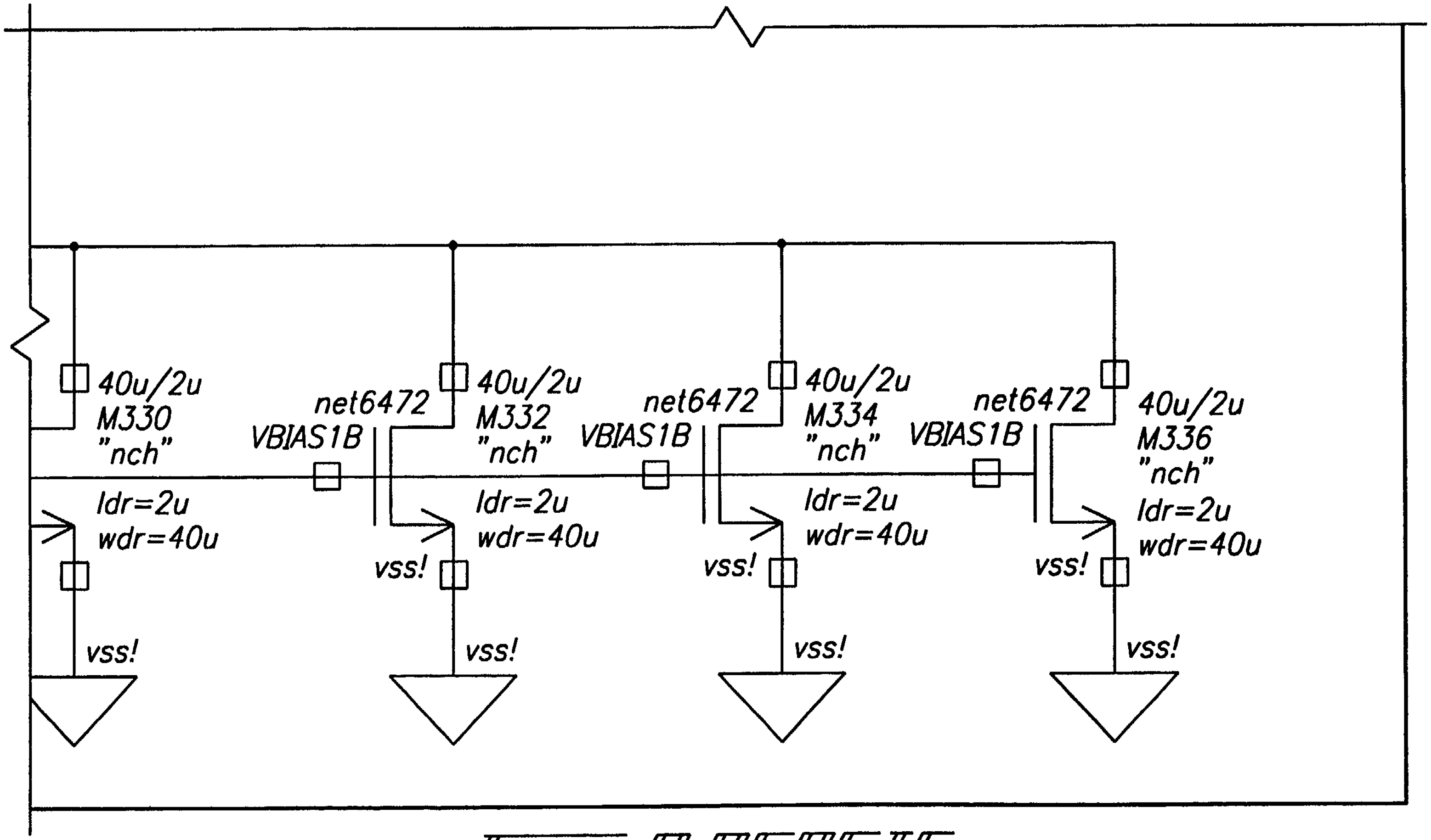

40u/2u
M330
"nch"
ldr=2u
wdr=40u
vss!
net6472
VBIAS1B
40u/2u
M332
"nch"
ldr=2u
wdr=40u
vss!
vss!
net6472
VBIAS1B
40u/2u
M334
"nch"
ldr=2u
wdr=40u
vss!
vss!
net6472
VBIAS1B
40u/2u
M336
"nch"
ldr=2u
wdr=40u
vss!
vss!

Fig 8.06061E

8.0607AA	8.0607AB	8.0607AC	8.0607AD	8.0607AE	8.0607AF	8.0607AG	8.0607AH	8.0607AI	8.0607AJ
8.0607BA	8.0607BB	8.0607BC	8.0607BD	8.0607BE	8.0607BF	8.0607BG	8.0607BH	8.0607BI	8.0607BJ
8.0607CA	8.0607CB	8.0607CC	8.0607CD	8.0607CE	8.0607CF	8.0607CG	8.0607CH	8.0607CI	8.0607CJ
8.0607DA	8.0607DB	8.0607DC	8.0607DD	8.0607DE	8.0607DF	8.0607DG	8.0607DH	8.0607DI	8.0607DJ
8.0607EA	8.0607EB	8.0607EC	8.0607ED	8.0607EE	8.0607EF	8.0607EG	8.0607EH	8.0607EI	8.0607EJ
8.0607FA	8.0607FB	8.0607FC	8.0607FD	8.0607FE	8.0607FF	8.0607FG	8.0607FH	8.0607FI	8.0607FJ
8.0607GA	8.0607GB	8.0607GC	8.0607GD	8.0607GE	8.0607GF	8.0607GG	8.0607GH	8.0607GI	8.0607GJ
8.0607HA	8.0607HB	8.0607HC	8.0607HD	8.0607HE	8.0607HF	8.0607HG	8.0607HH	8.0607HI	8.0607HJ
8.0607IA	8.0607IB	8.0607IC	8.0607ID	8.0607IE	8.0607IF	8.0607IG	8.0607IH	8.0607II	8.0607IJ
8.0607JA	8.0607JB	8.0607JC	8.0607JD	8.0607JE	8.0607JF	8.0607JG	8.0607JH	8.0607JI	8.0607JJ

Fig 8.0607

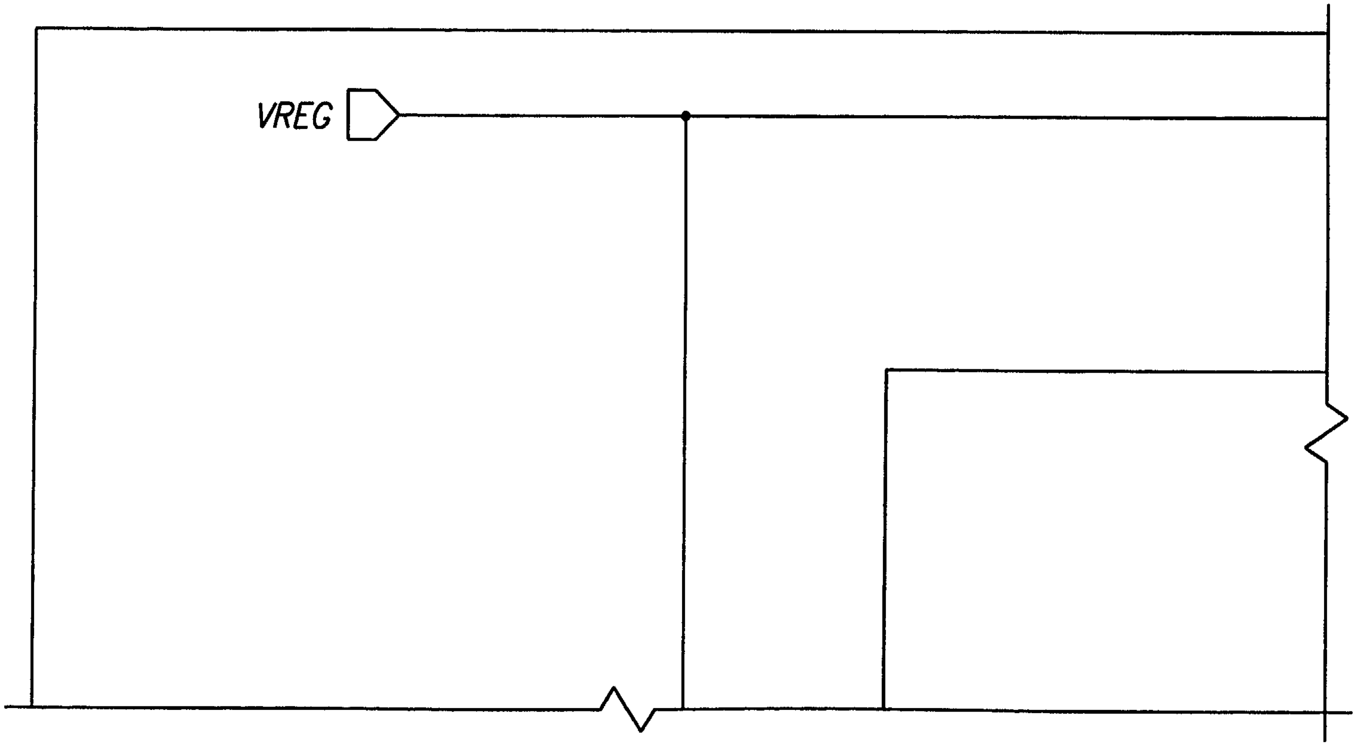


Fig 8.0601AA

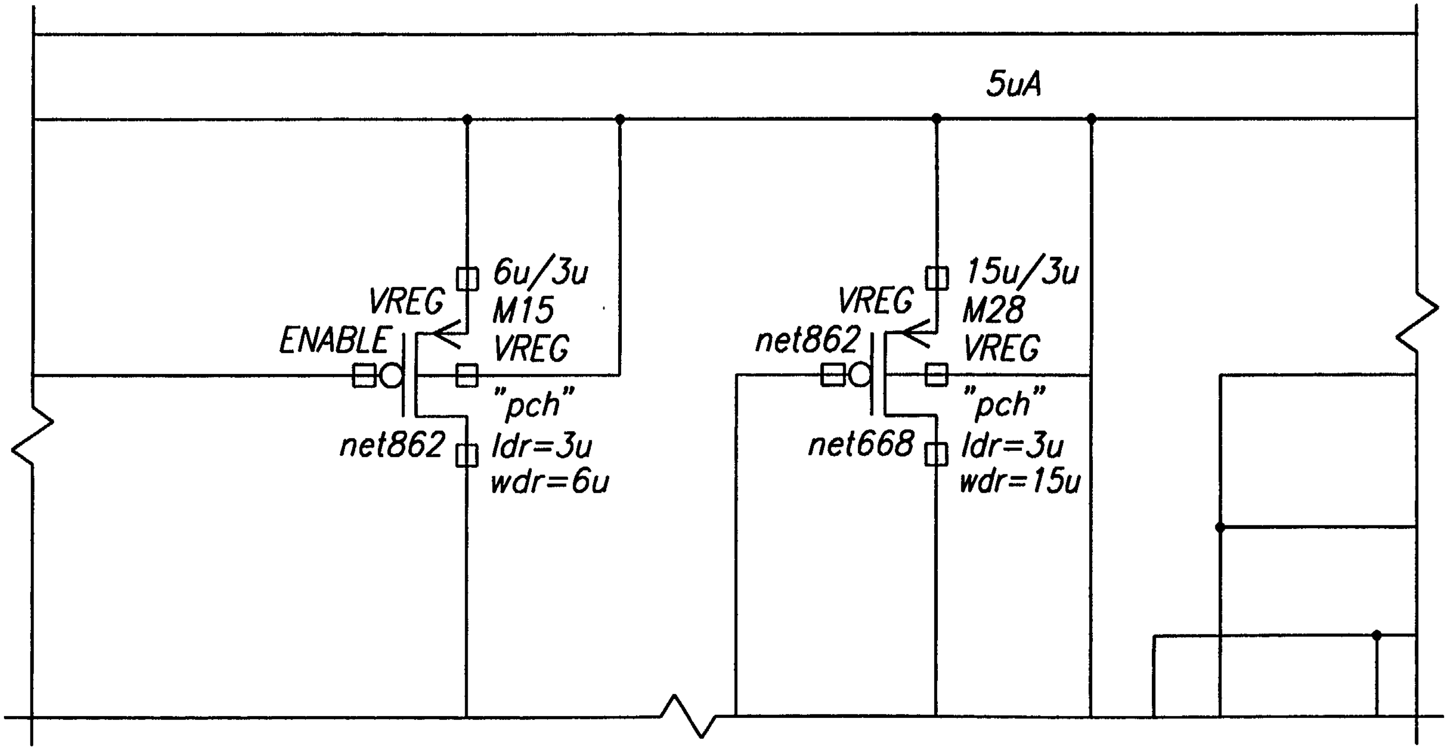

5uA
6u/3u
M15
VREG
VREG
ENABLE
"pch"
net862
ldr=3u
wdr=6u
15u/3u
M28
VREG
VREG
net862
"pch"
net668
ldr=3u
wdr=15u

Fig 8.0601AB

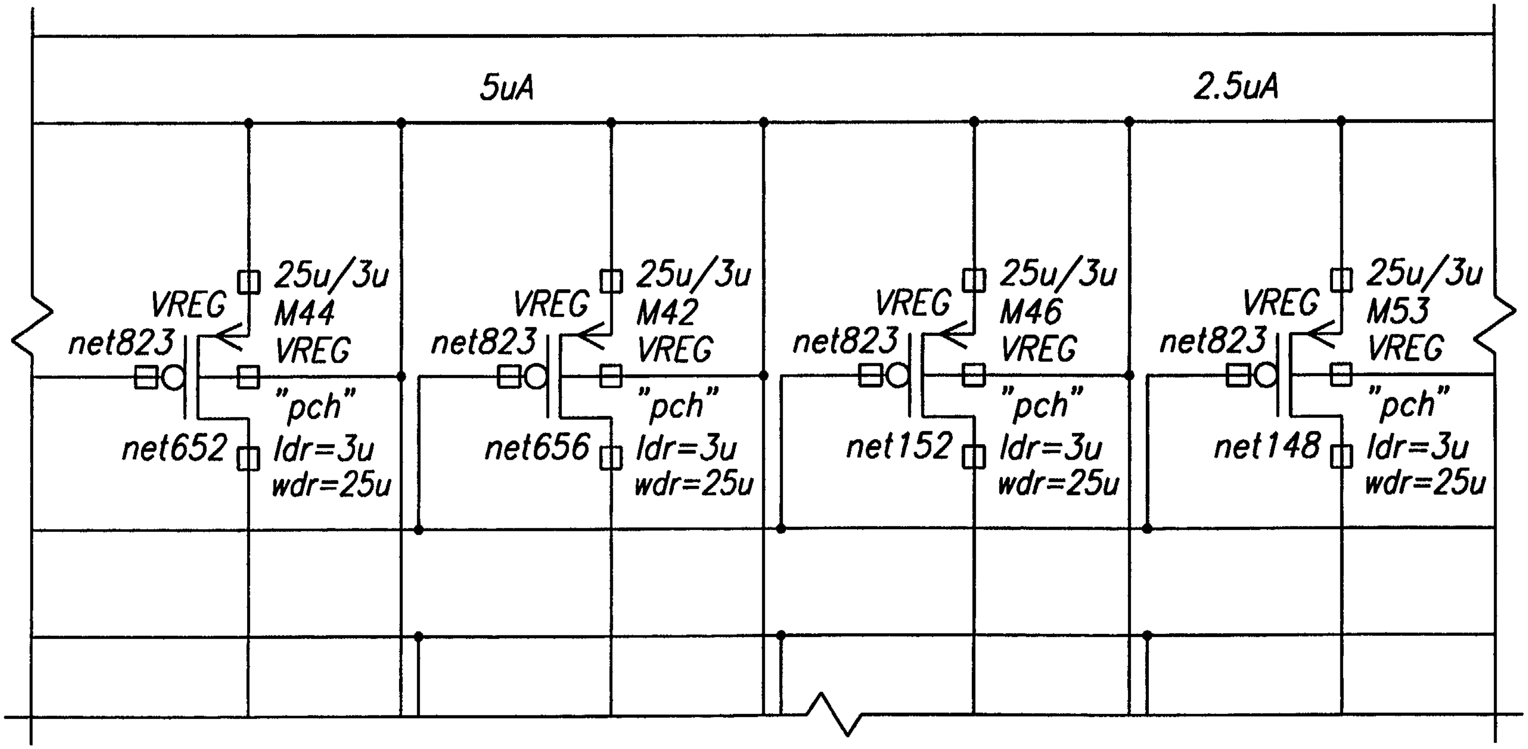

5uA
2.5uA
VREG
net823
25u/3u
M44
VREG
"pch"
net652
ldr=3u
wdr=25u
VREG
net823
25u/3u
M42
VREG
"pch"
net656
ldr=3u
wdr=25u
VREG
net823
25u/3u
M46
VREG
"pch"
net152
ldr=3u
wdr=25u
VREG
net823
25u/3u
M53
VREG
"pch"
net148
ldr=3u
wdr=25u

Fig 8.0601AC

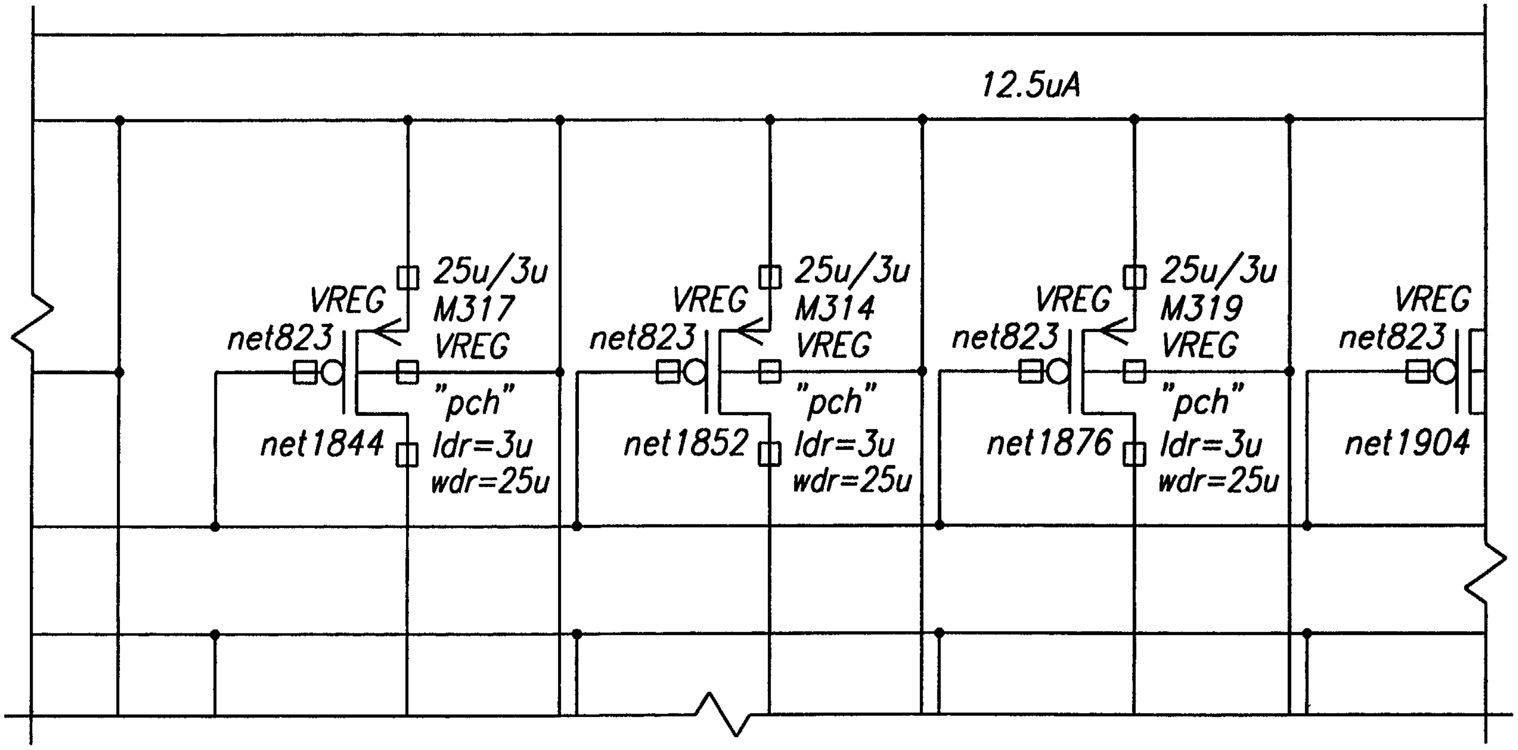

12.5uA
VREG
net823
25u/3u
M317
VREG
"pch"
net1844
ldr=3u
wdr=25u
VREG
net823
25u/3u
M314
VREG
"pch"
net1852
ldr=3u
wdr=25u
VREG
net823
25u/3u
M319
VREG
"pch"
net1876
ldr=3u
wdr=25u
VREG
net823
net1904

Fig 8.0607AD

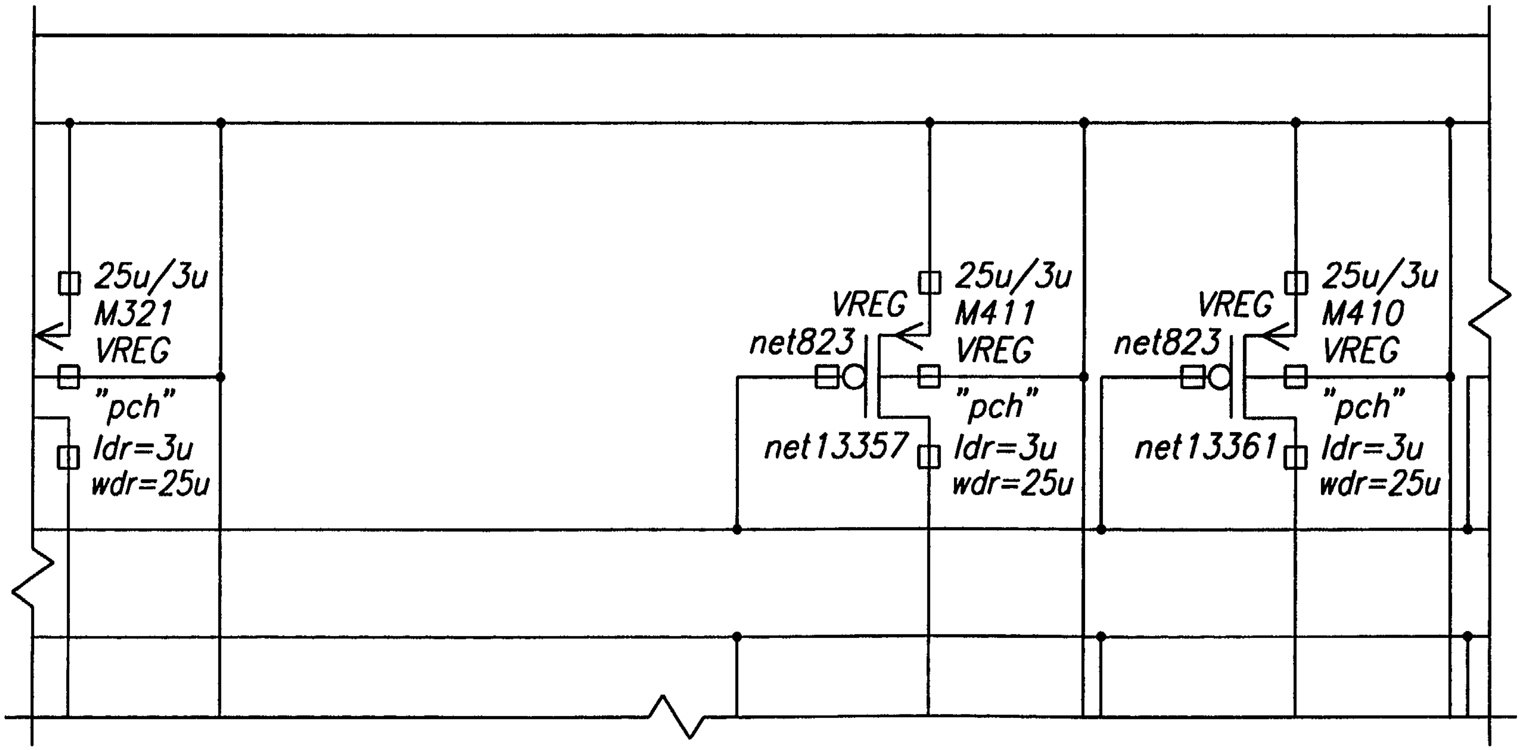

25u/3u
M321
VREG
"pch"
ldr=3u
wdr=25u
VREG
net823
net13357
25u/3u
M411
VREG
"pch"
ldr=3u
wdr=25u
VREG
net823
net13361
25u/3u
M410
VREG
"pch"
ldr=3u
wdr=25u

Fig 8.0601AE

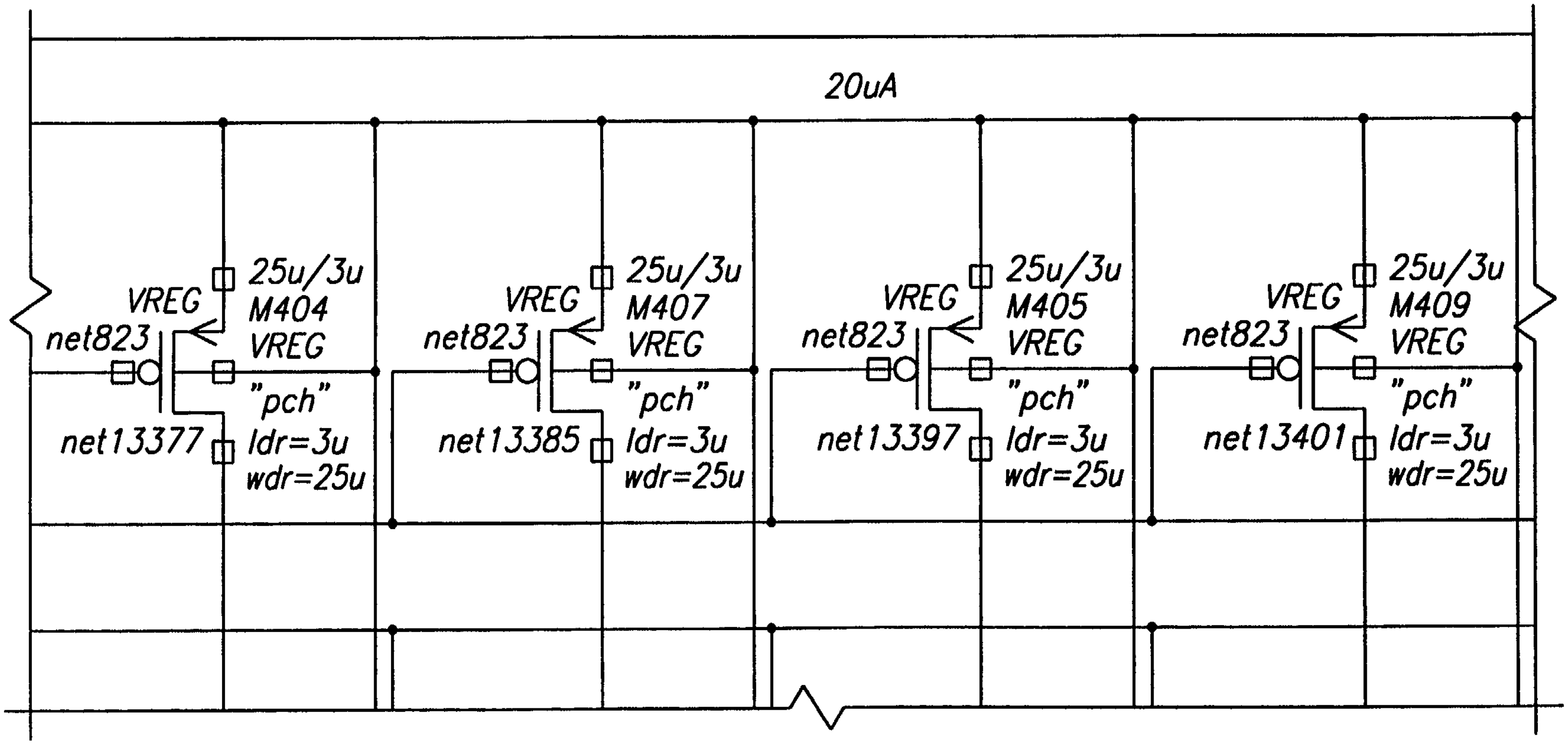

20uA
VREG
net823
25u/3u
M404
VREG
"pch"
net13377
ldr=3u
wdr=25u
VREG
net823
25u/3u
M407
VREG
"pch"
net13385
ldr=3u
wdr=25u
VREG
net823
25u/3u
M405
VREG
"pch"
net13397
ldr=3u
wdr=25u
VREG
net823
25u/3u
M409
VREG
"pch"
net13401
ldr=3u
wdr=25u

Fig 8.0607AF

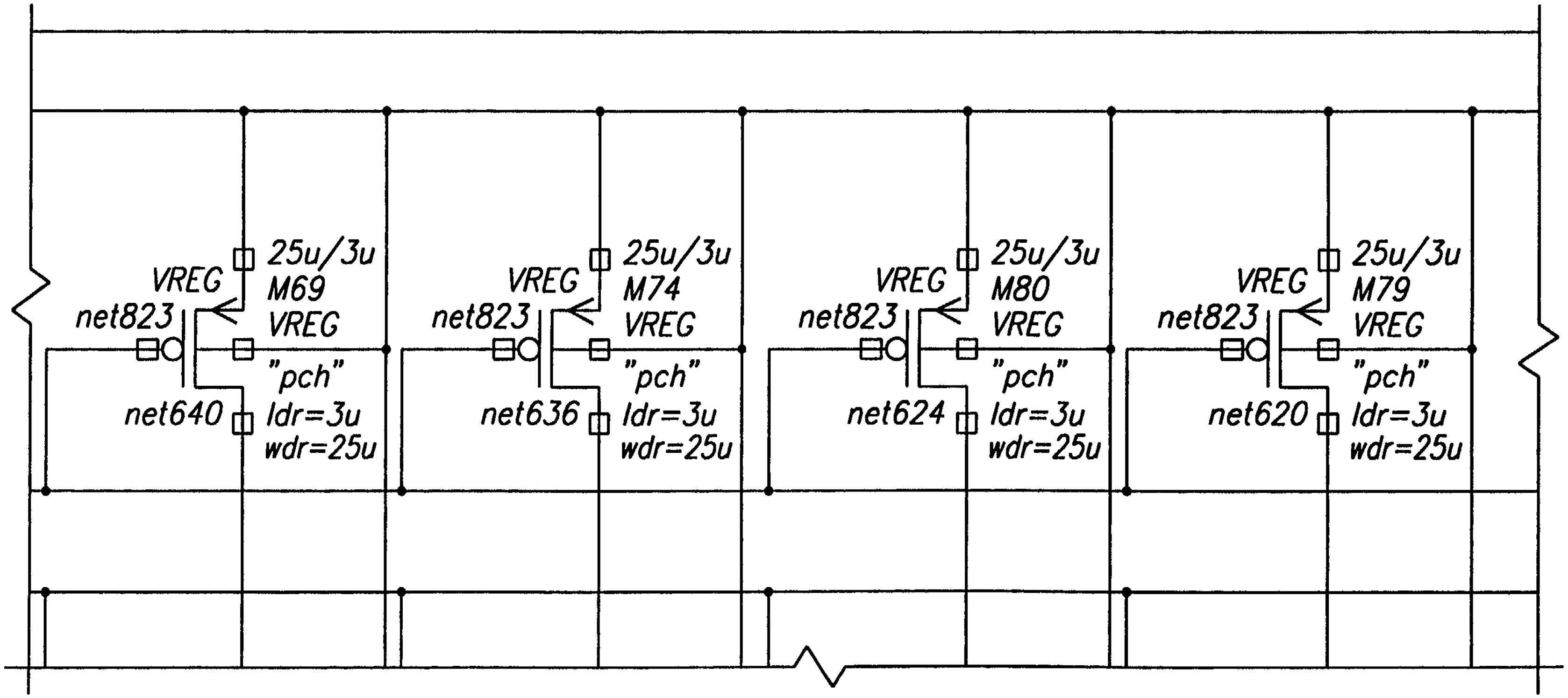

VREG
net823
25u/3u
M69
VREG
"pch"
net640
ldr=3u
wdr=25u
VREG
net823
25u/3u
M74
VREG
"pch"
net636
ldr=3u
wdr=25u
VREG
net823
25u/3u
M80
VREG
"pch"
net624
ldr=3u
wdr=25u
VREG
net823
25u/3u
M79
VREG
"pch"
net620
ldr=3u
wdr=25u

Fig 8.0601AG

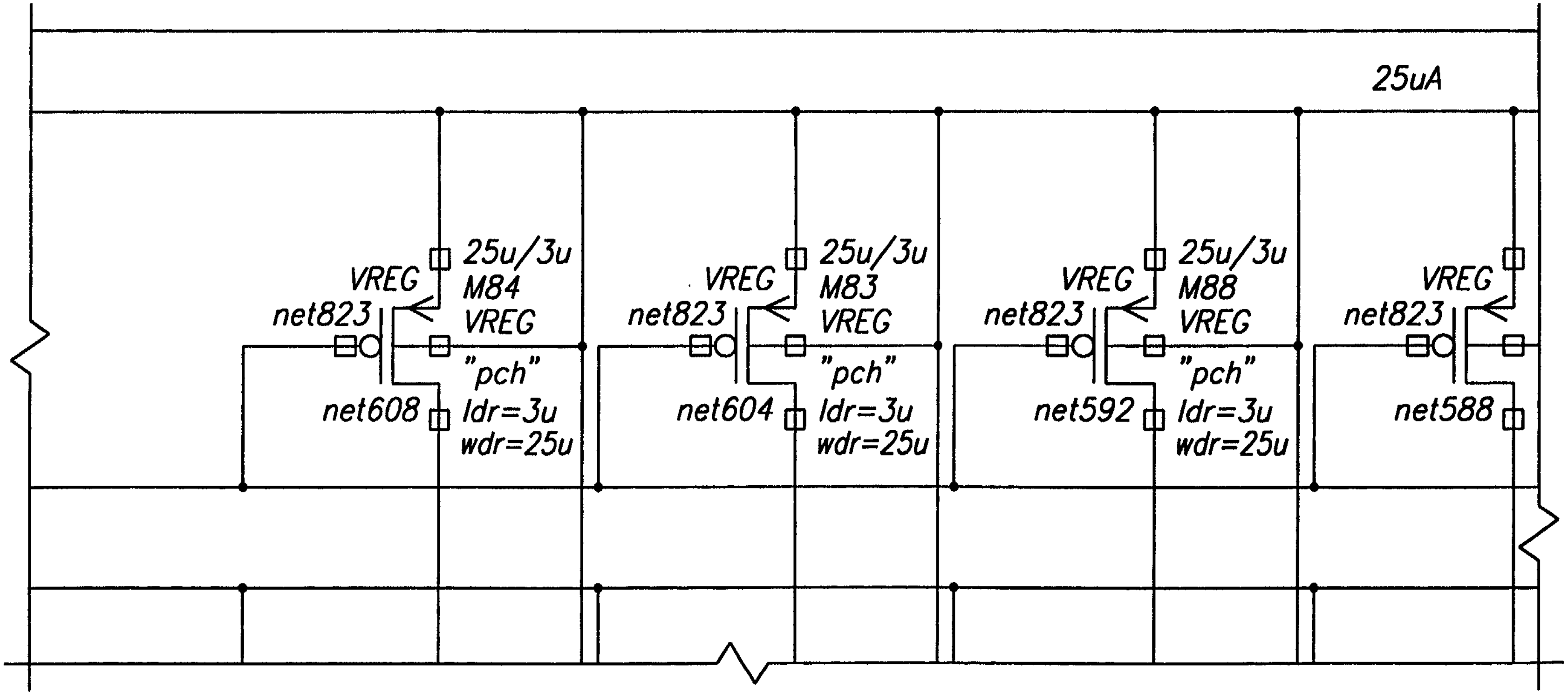

25uA
VREG
net823
25u/3u
M84
VREG
"pch"
net608
ldr=3u
wdr=25u
VREG
net823
25u/3u
M83
VREG
"pch"
net604
ldr=3u
wdr=25u
VREG
net823
25u/3u
M88
VREG
"pch"
net592
ldr=3u
wdr=25u
VREG
net823
net588

Fig 8.0601AH

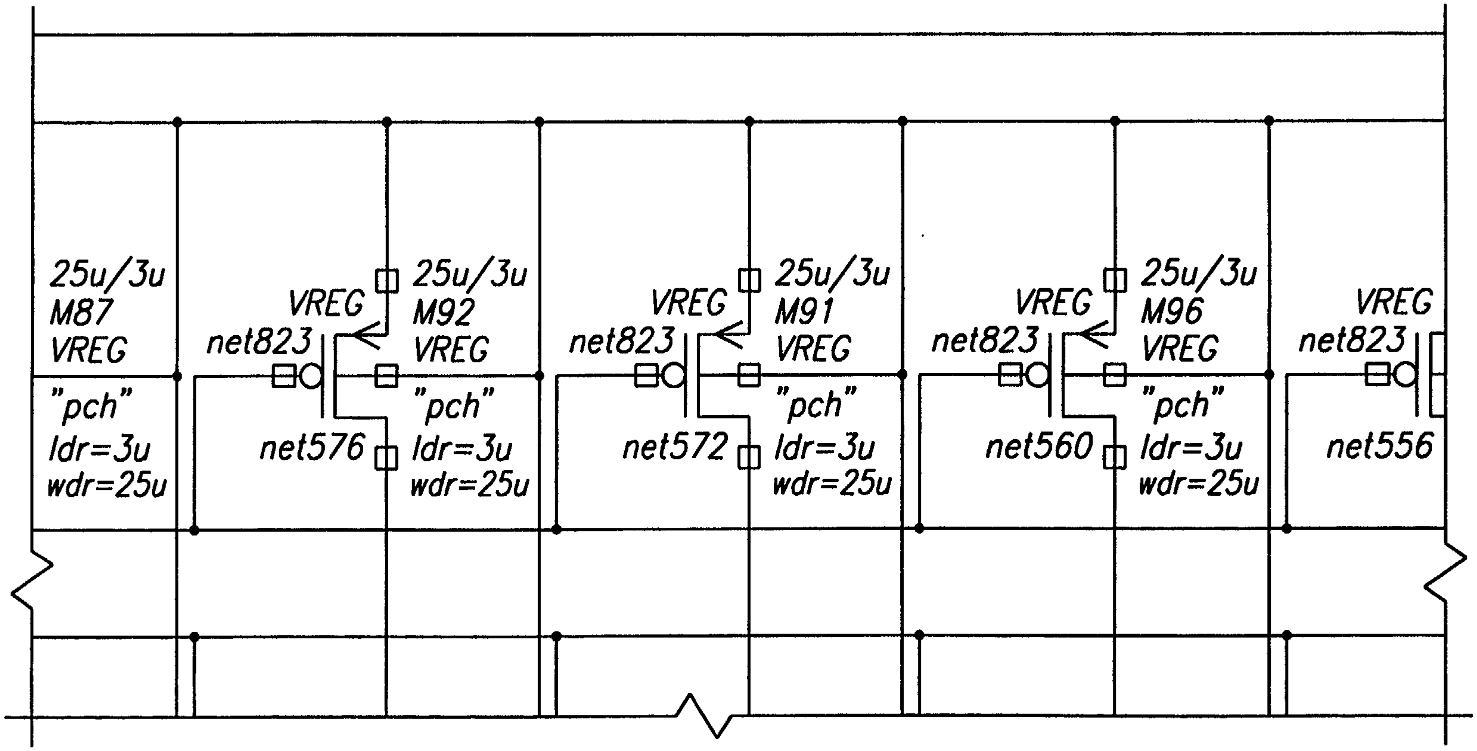

25u/3u
M87
VREG
"pch"
ldr=3u
wdr=25u
VREG
net823
net576
25u/3u
M92
VREG
"pch"
ldr=3u
wdr=25u
VREG
net823
net572
25u/3u
M91
VREG
"pch"
ldr=3u
wdr=25u
VREG
net823
net560
25u/3u
M96
VREG
"pch"
ldr=3u
wdr=25u
VREG
net823
net556

Fig 8.0601AI

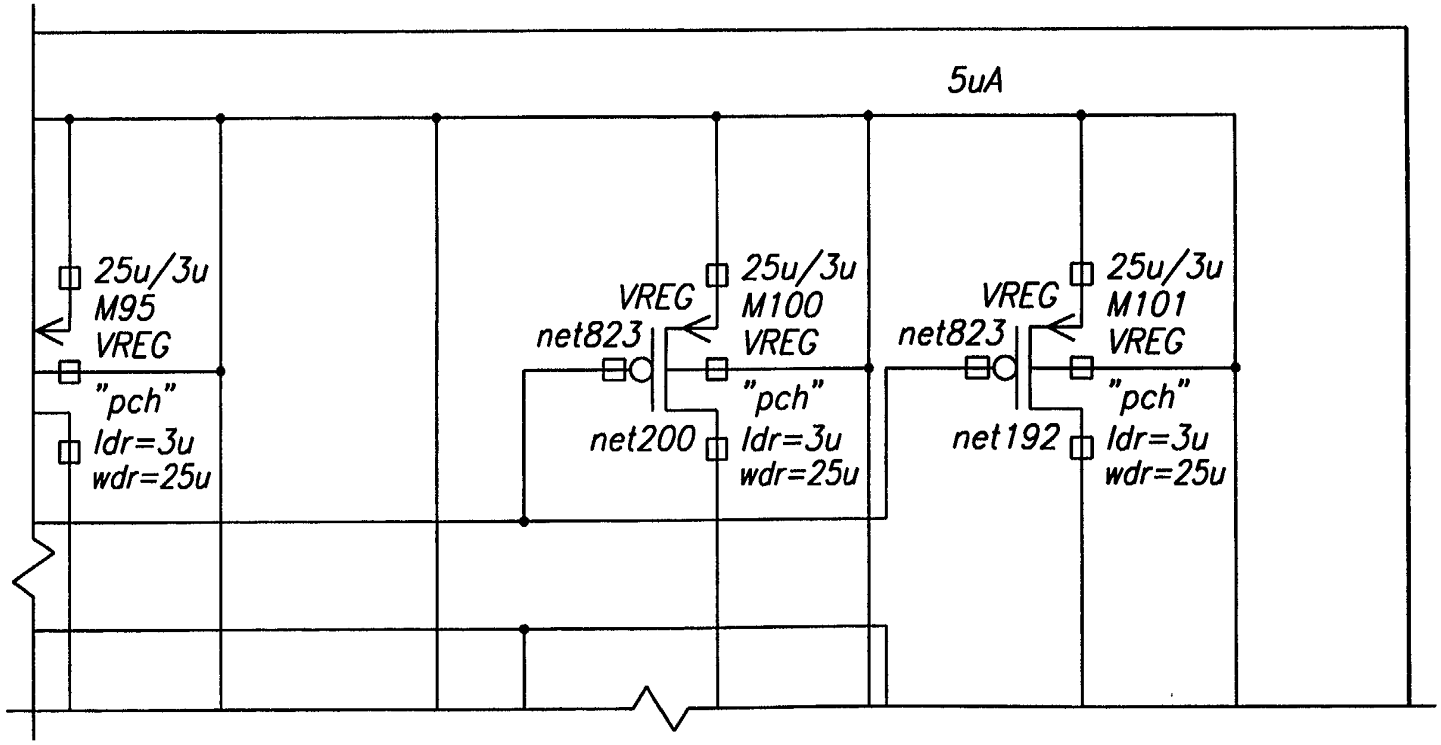

5uA
25u/3u
M95
VREG
"pch"
ldr=3u
wdr=25u
VREG
net823
25u/3u
M100
VREG
"pch"
net200
ldr=3u
wdr=25u
VREG
net823
25u/3u
M101
VREG
"pch"
net192
ldr=3u
wdr=25u

Fig 8.0601A.1

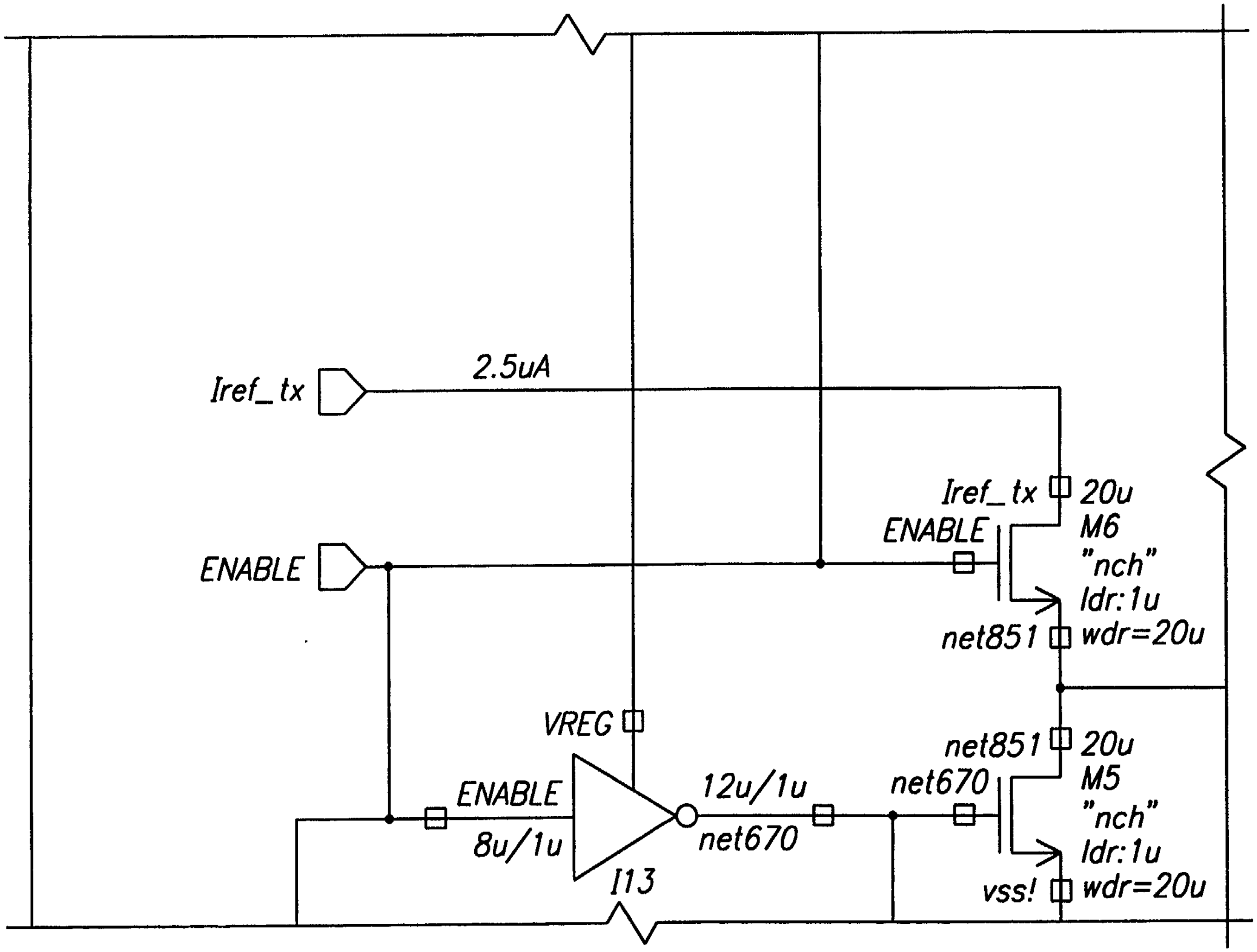

Iref_tx
2.5uA
ENABLE
Iref_tx
20u
M6
"nch"
ldr:1u
wdr=20u
ENABLE
net851
net851
20u
M5
"nch"
ldr:1u
wdr=20u
net670
vss!
VREG
ENABLE
8u/1u
12u/1u
net670
I13

Fig 8.0607BA

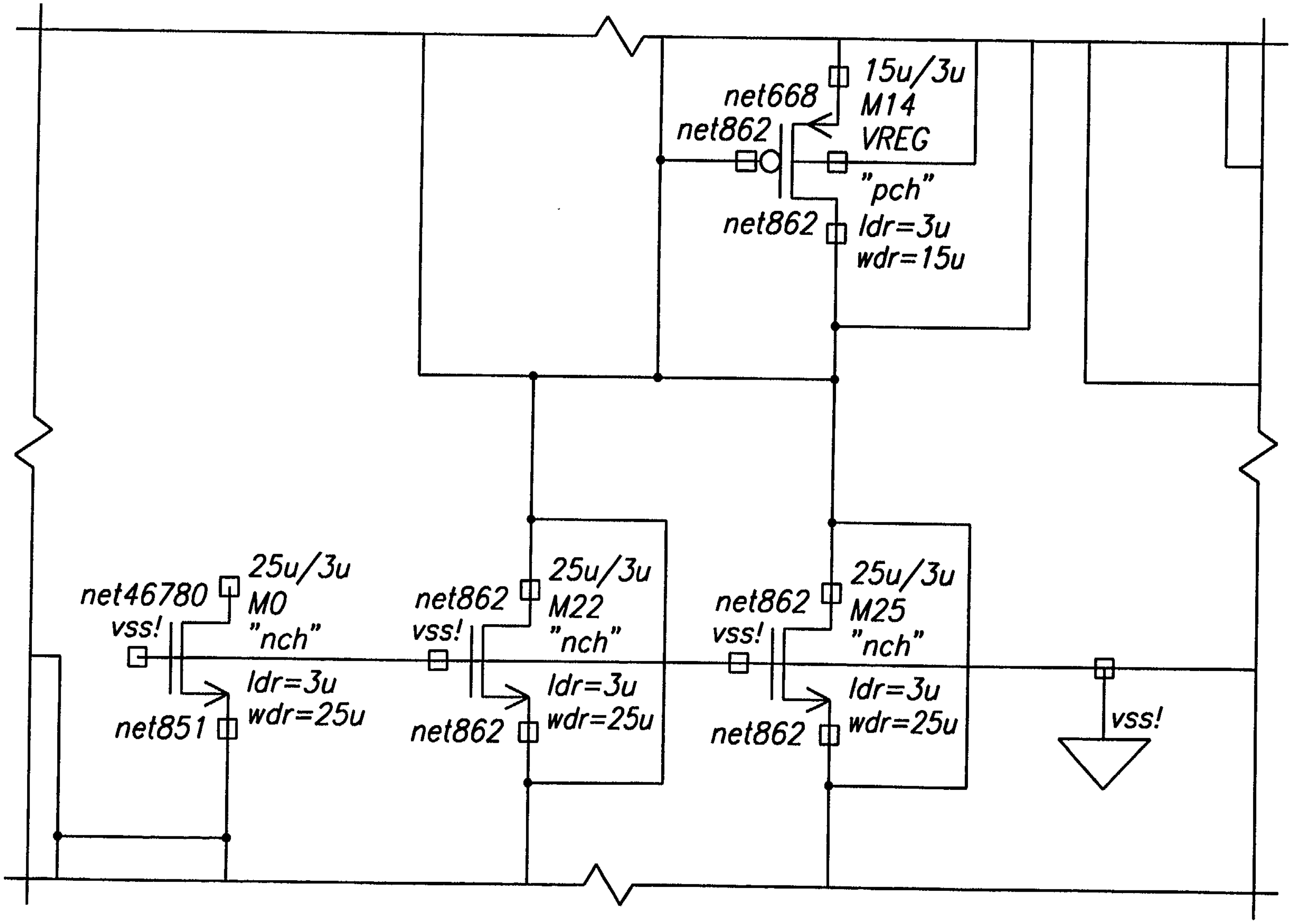

15u/3u
M14
VREG
"pch"
ldr=3u
wdr=15u
net668
net862
net862
25u/3u
M0
"nch"
ldr=3u
wdr=25u
net46780
vss!
net851
25u/3u
M22
"nch"
ldr=3u
wdr=25u
net862
vss!
net862
25u/3u
M25
"nch"
ldr=3u
wdr=25u
net862
vss!
net862
vss!

Fig 8.0601BB

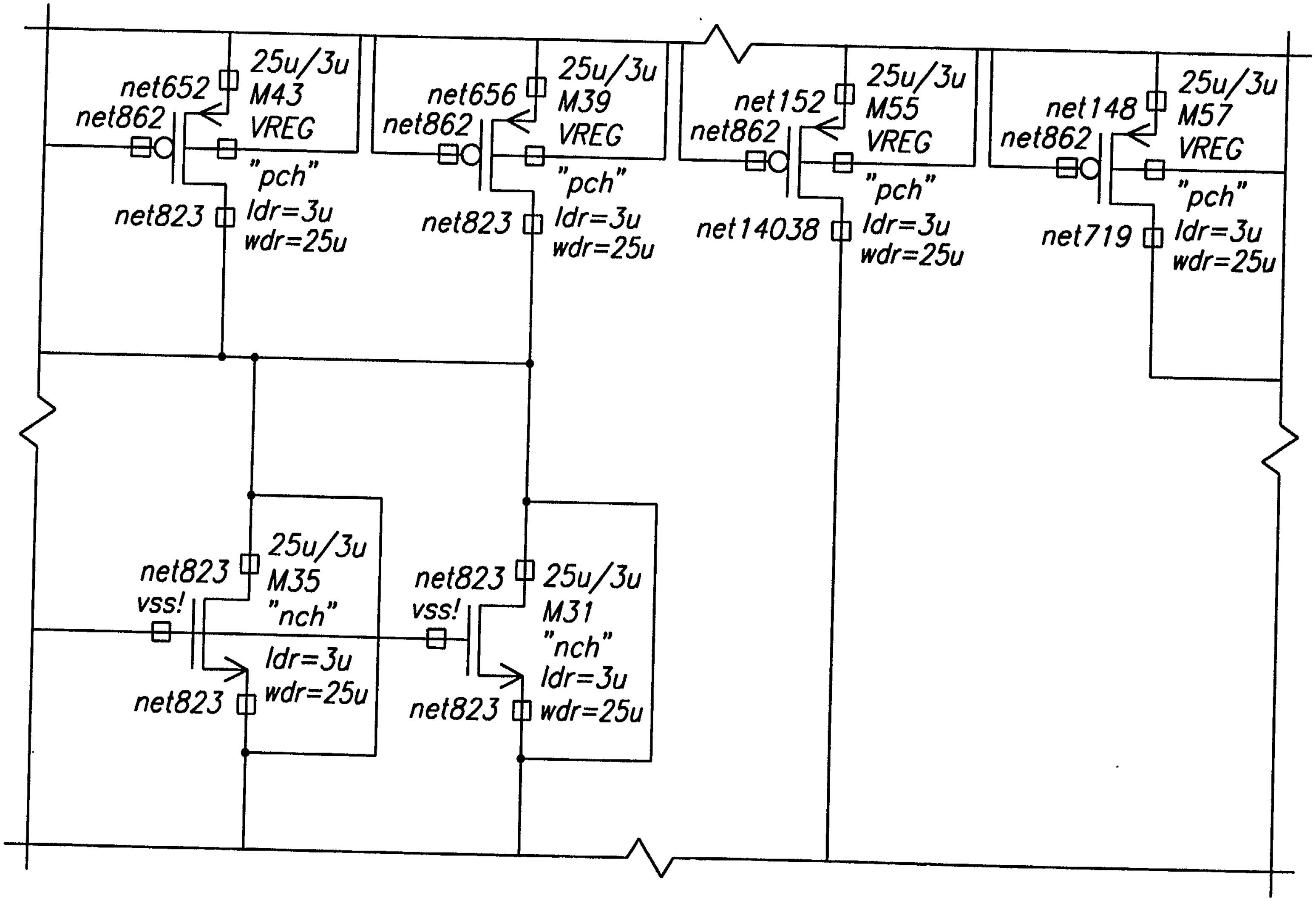

net652
net862
25u/3u
M43
VREG
"pch"
net823
ldr=3u
wdr=25u
net656
net862
25u/3u
M39
VREG
"pch"
net823
ldr=3u
wdr=25u
net152
net862
25u/3u
M55
VREG
"pch"
net14038
ldr=3u
wdr=25u
net148
net862
25u/3u
M57
VREG
"pch"
net719
ldr=3u
wdr=25u
net823
vss!
25u/3u
M35
"nch"
ldr=3u
net823
wdr=25u
net823
vss!
25u/3u
M31
"nch"
ldr=3u
net823
wdr=25u

FIG 8.0607BC

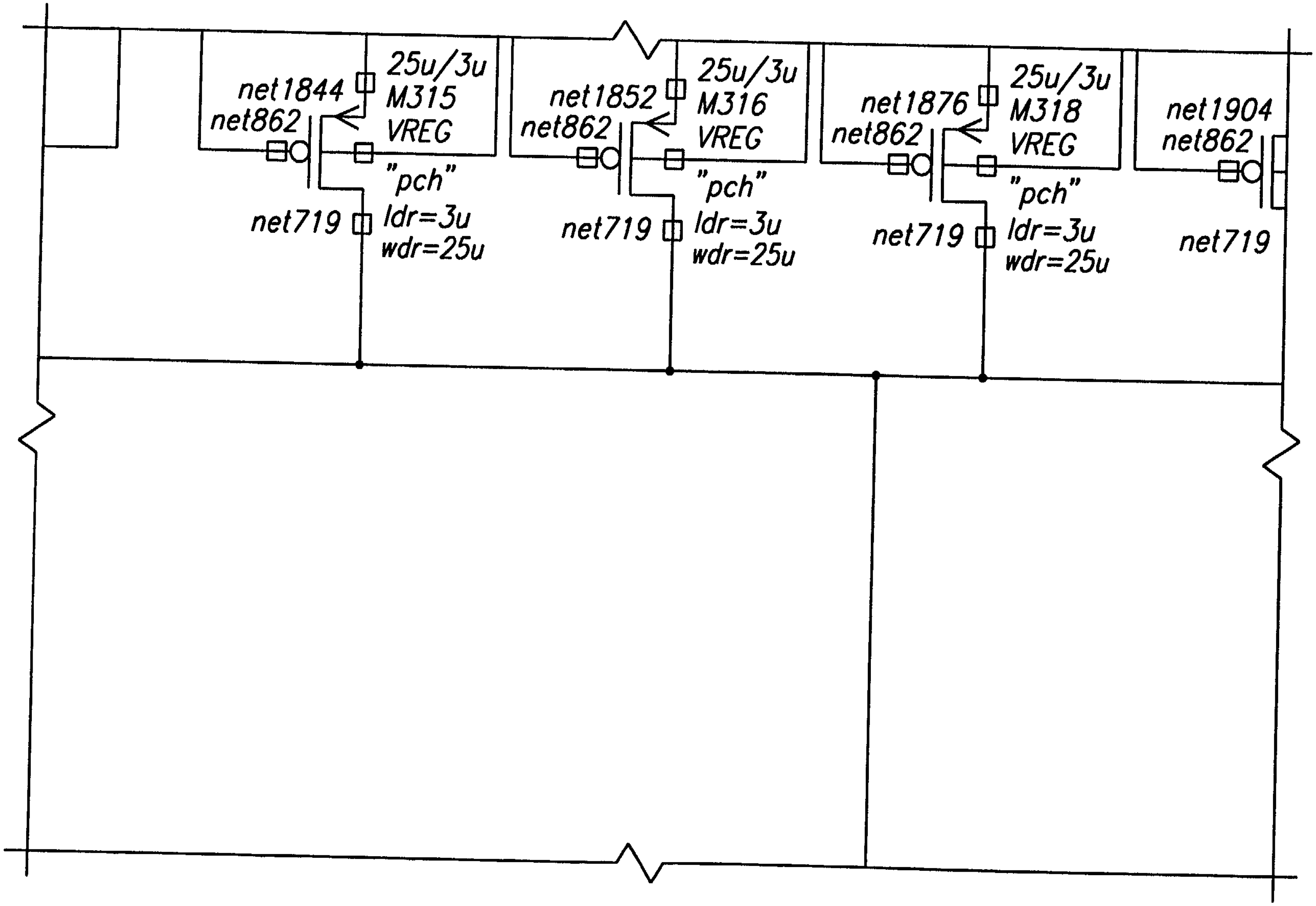

net1844
net862
25u/3u
M315
VREG
"pch"
net719
ldr=3u
wdr=25u
net1852
net862
25u/3u
M316
VREG
"pch"
net719
ldr=3u
wdr=25u
net1876
net862
25u/3u
M318
VREG
"pch"
net719
ldr=3u
wdr=25u
net1904
net862
net719

Fig 8.0601BD

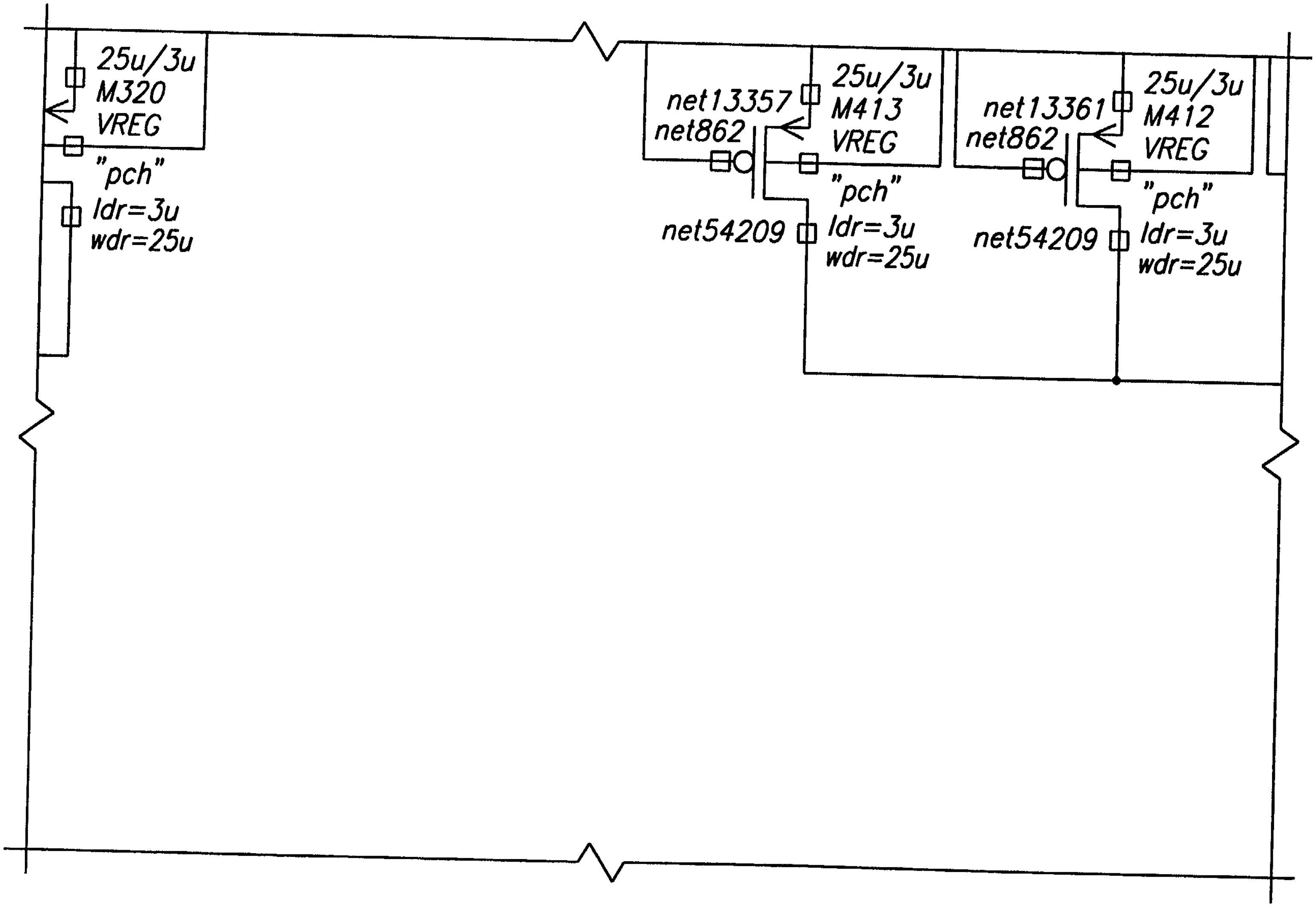

25u/3u
M320
VREG
"pch"
ldr=3u
wdr=25u
net13357
net862
25u/3u
M413
VREG
"pch"
net54209
ldr=3u
wdr=25u
net13361
net862
25u/3u
M412
VREG
"pch"
net54209
ldr=3u
wdr=25u

Fig 8.0601BE

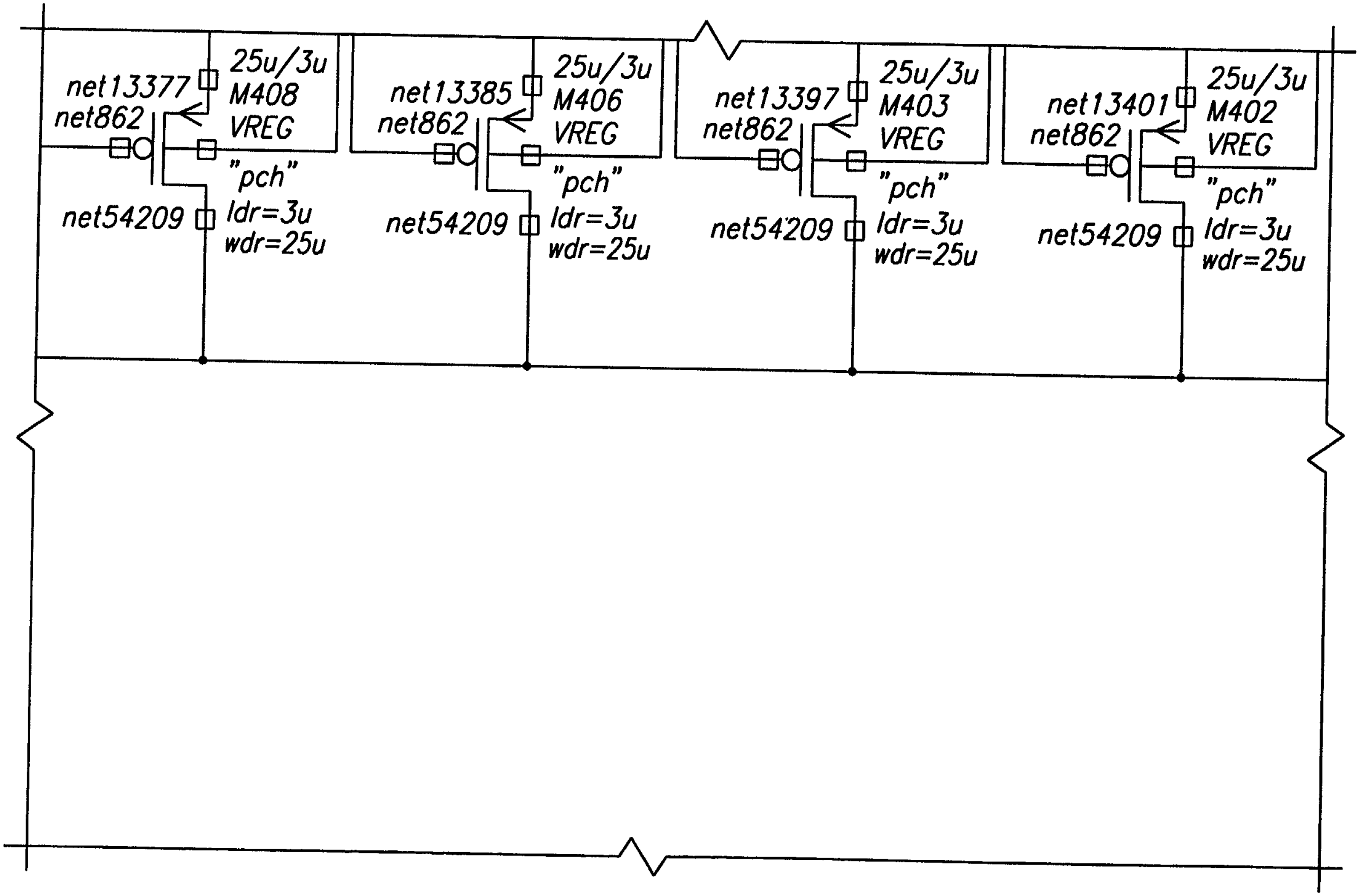

net13377
net862
25u/3u
M408
VREG
"pch"
ldr=3u
wdr=25u
net54209
net13385
net862
25u/3u
M406
VREG
"pch"
ldr=3u
wdr=25u
net54209
net13397
net862
25u/3u
M403
VREG
"pch"
ldr=3u
wdr=25u
net54209
net13401
net862
25u/3u
M402
VREG
"pch"
ldr=3u
wdr=25u
net54209

Fig 8.0607BF

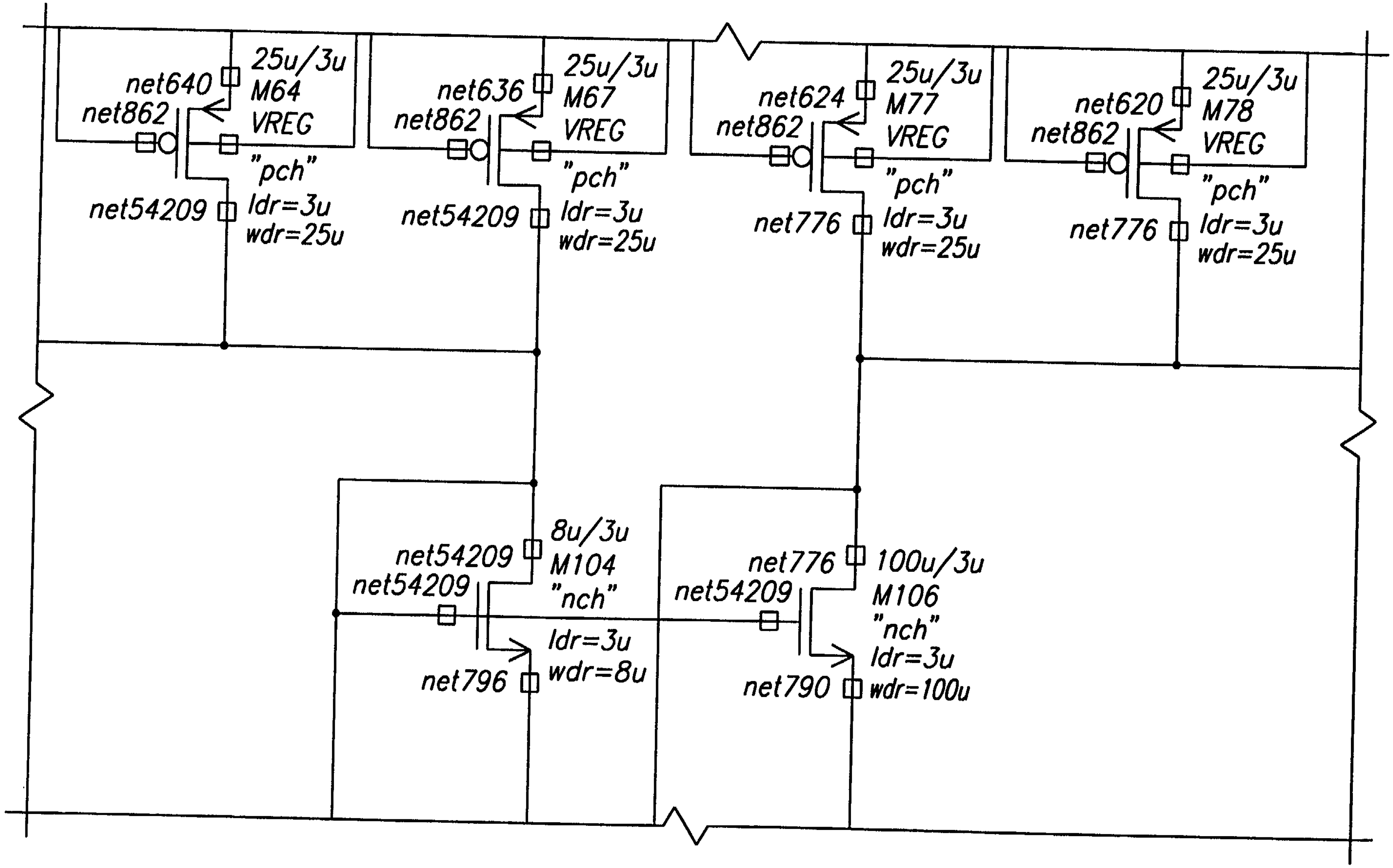

net640
net862
25u/3u
M64
VREG
"pch"
net54209
ldr=3u
wdr=25u
net636
net862
25u/3u
M67
VREG
"pch"
net54209
ldr=3u
wdr=25u
net624
net862
25u/3u
M77
VREG
"pch"
net776
ldr=3u
wdr=25u
net620
net862
25u/3u
M78
VREG
"pch"
net776
ldr=3u
wdr=25u
net54209
net54209
8u/3u
M104
"nch"
ldr=3u
net796
wdr=8u
net776
net54209
100u/3u
M106
"nch"
ldr=3u
net790
wdr=100u

Fig 8.0607BG

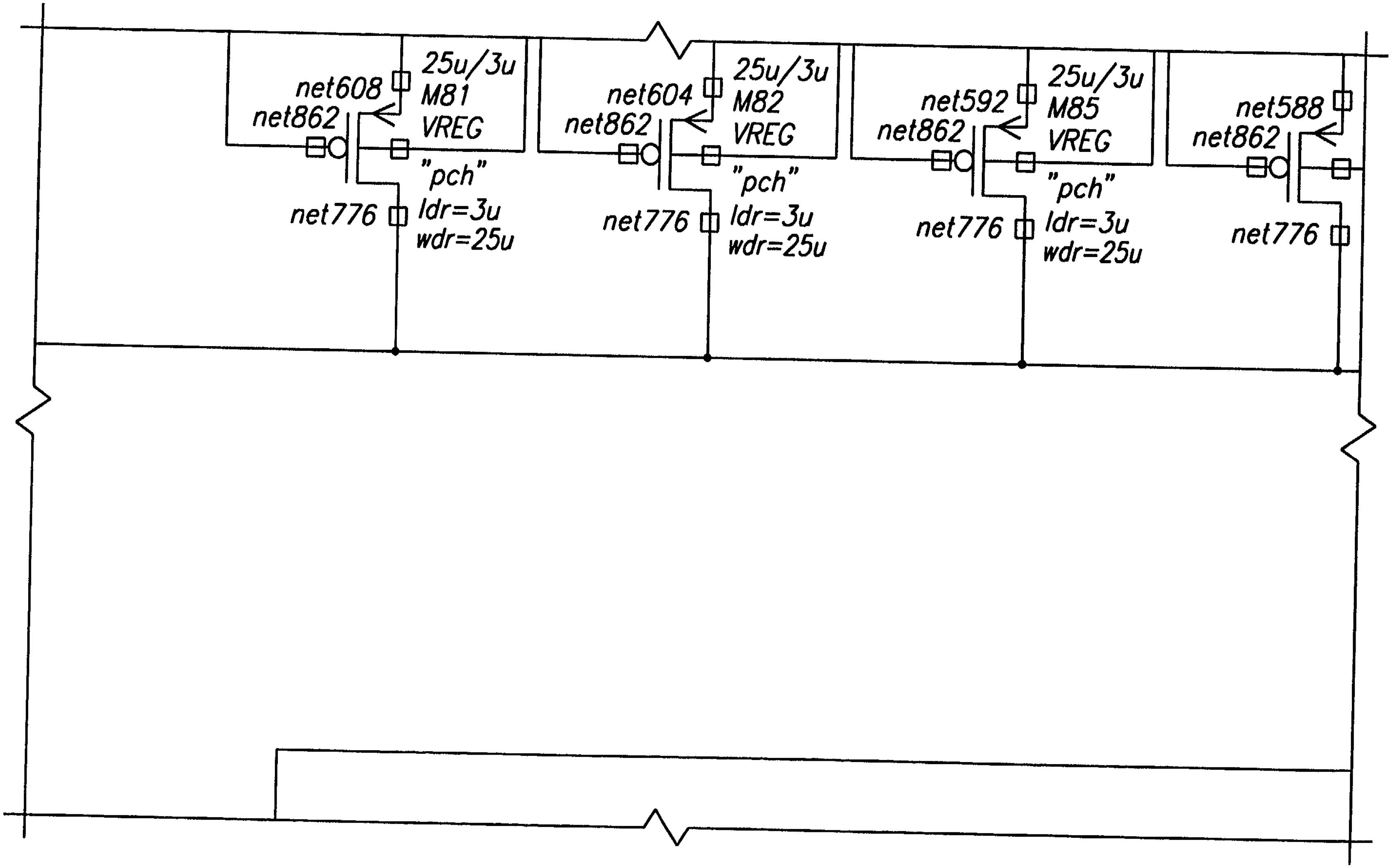
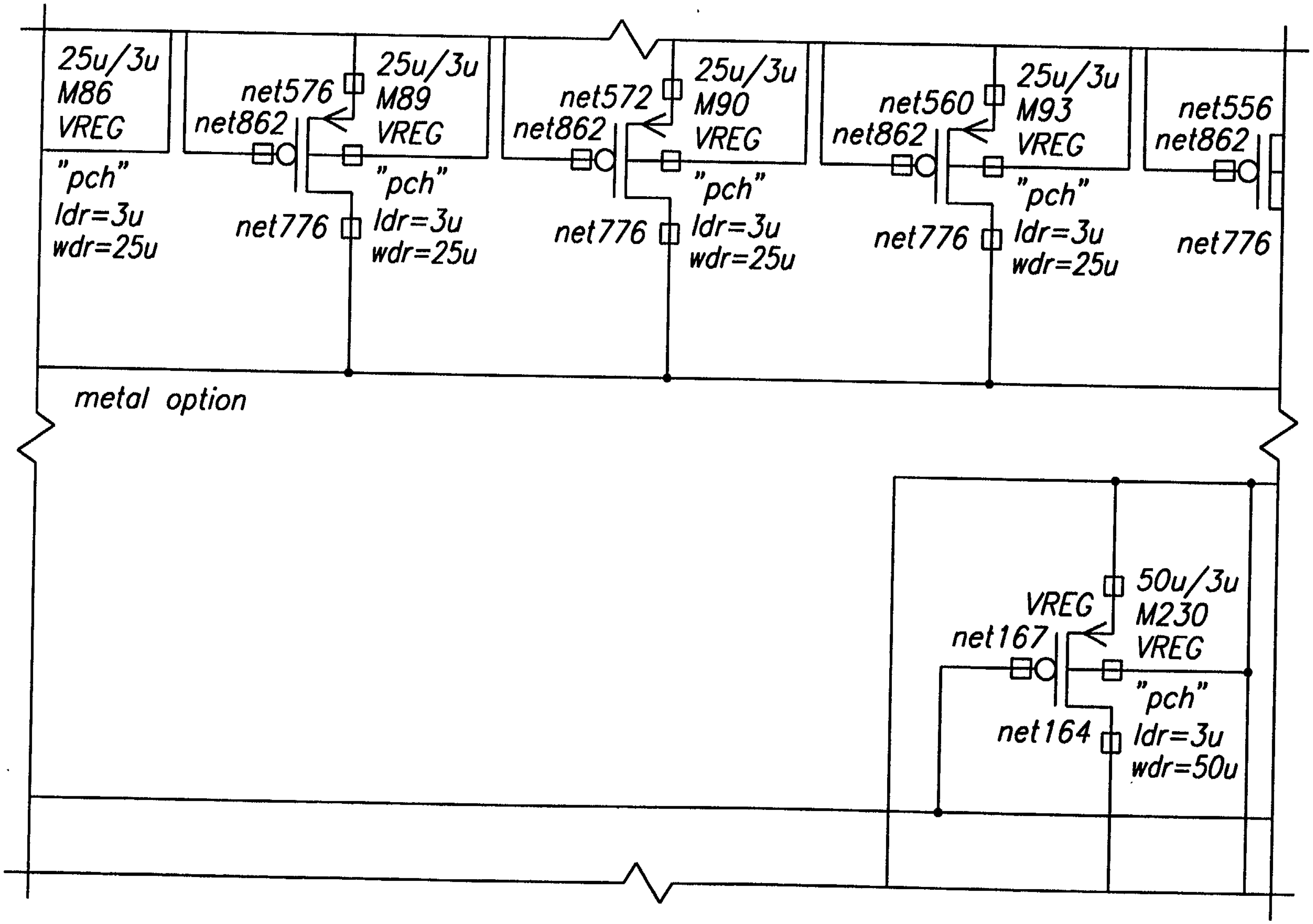

25u/3u
M81
VREG
"pch"
ldr=3u
wdr=25u
net608
net862
net776
25u/3u
M82
VREG
"pch"
ldr=3u
wdr=25u
net604
net862
net776
25u/3u
M85
VREG
"pch"
ldr=3u
wdr=25u
net592
net862
net776
net588
net862
net776

Fig 8.0607BH


25u/3u
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VREG
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ldr=3u
wdr=25u
net576
net862
net776
25u/3u
M89
VREG
"pch"
ldr=3u
wdr=25u
net572
net862
net776
25u/3u
M90
VREG
"pch"
ldr=3u
wdr=25u
net560
net862
net776
25u/3u
M93
VREG
"pch"
ldr=3u
wdr=25u
net556
net862
net776
metal option
VREG
net167
net164
50u/3u
M230
VREG
"pch"
ldr=3u
wdr=50u

Fig 8.0607B1

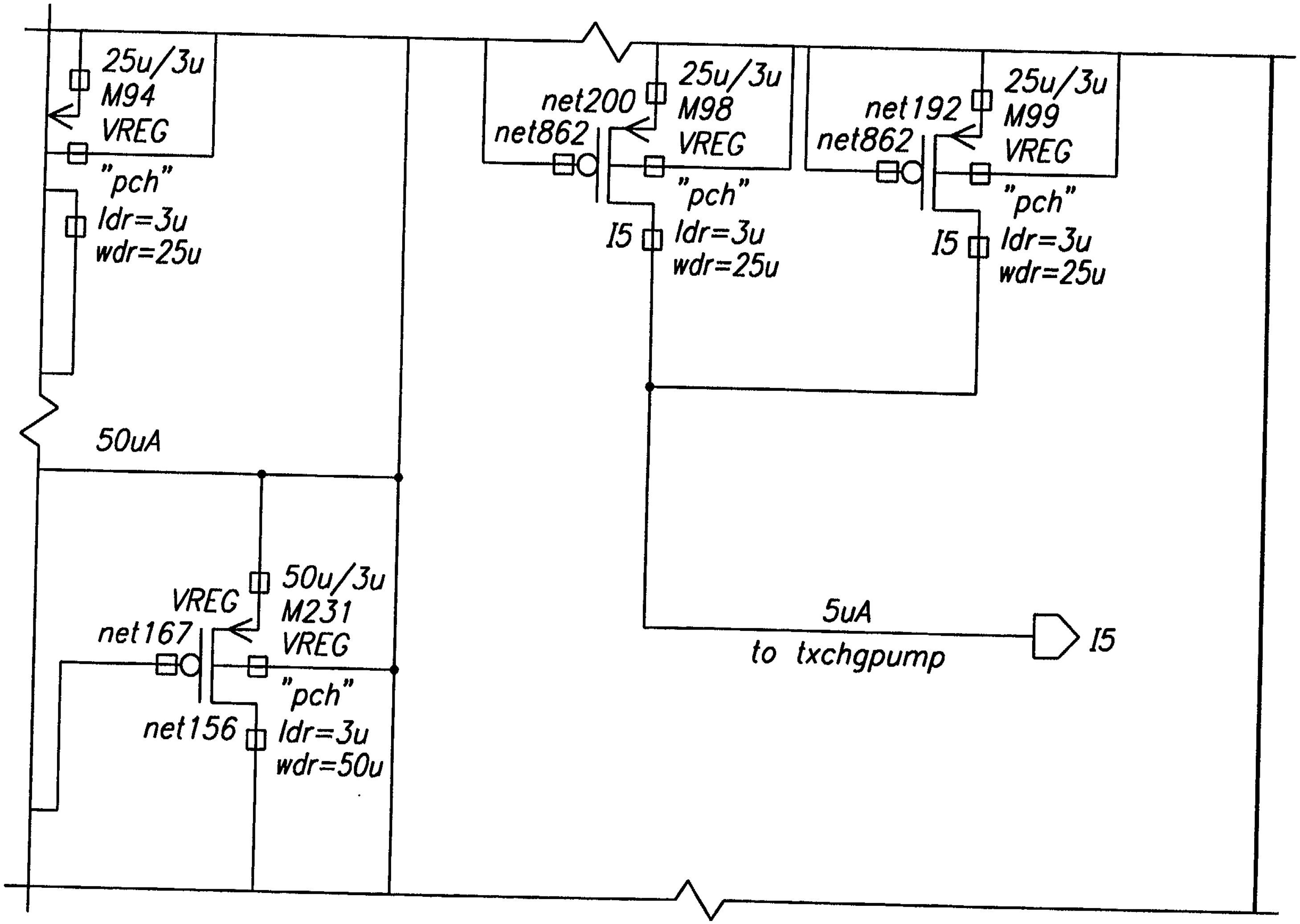

25u/3u
M94
VREG
"pch"
ldr=3u
wdr=25u
50uA
net200
net862
25u/3u
M98
VREG
"pch"
I5
ldr=3u
wdr=25u
net192
net862
25u/3u
M99
VREG
"pch"
I5
ldr=3u
wdr=25u
VREG
net167
50u/3u
M231
VREG
"pch"
net156
ldr=3u
wdr=50u
5uA
to txchgpump
I5

Fig 8.0607B.1

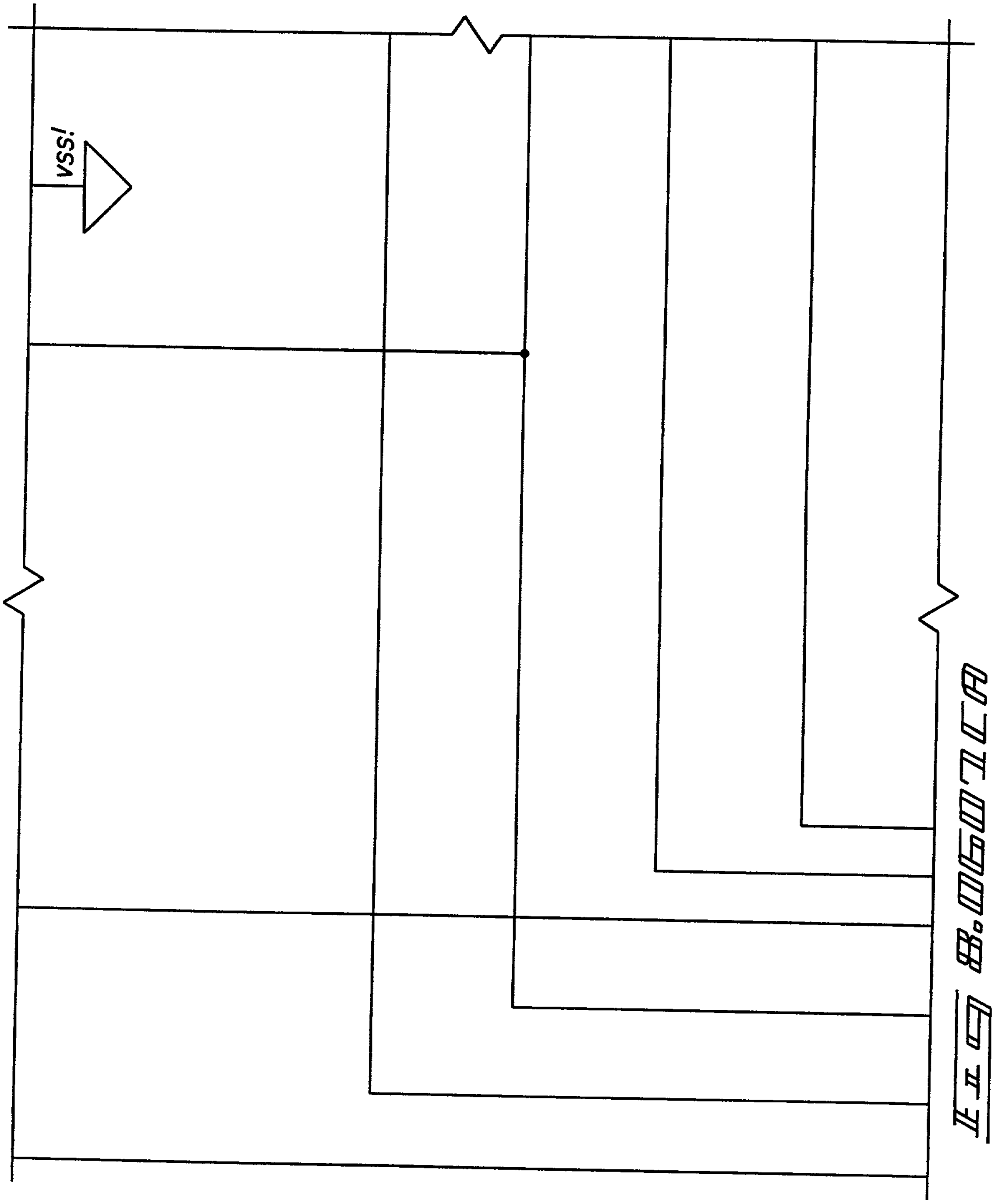


Fig 8.0607CA

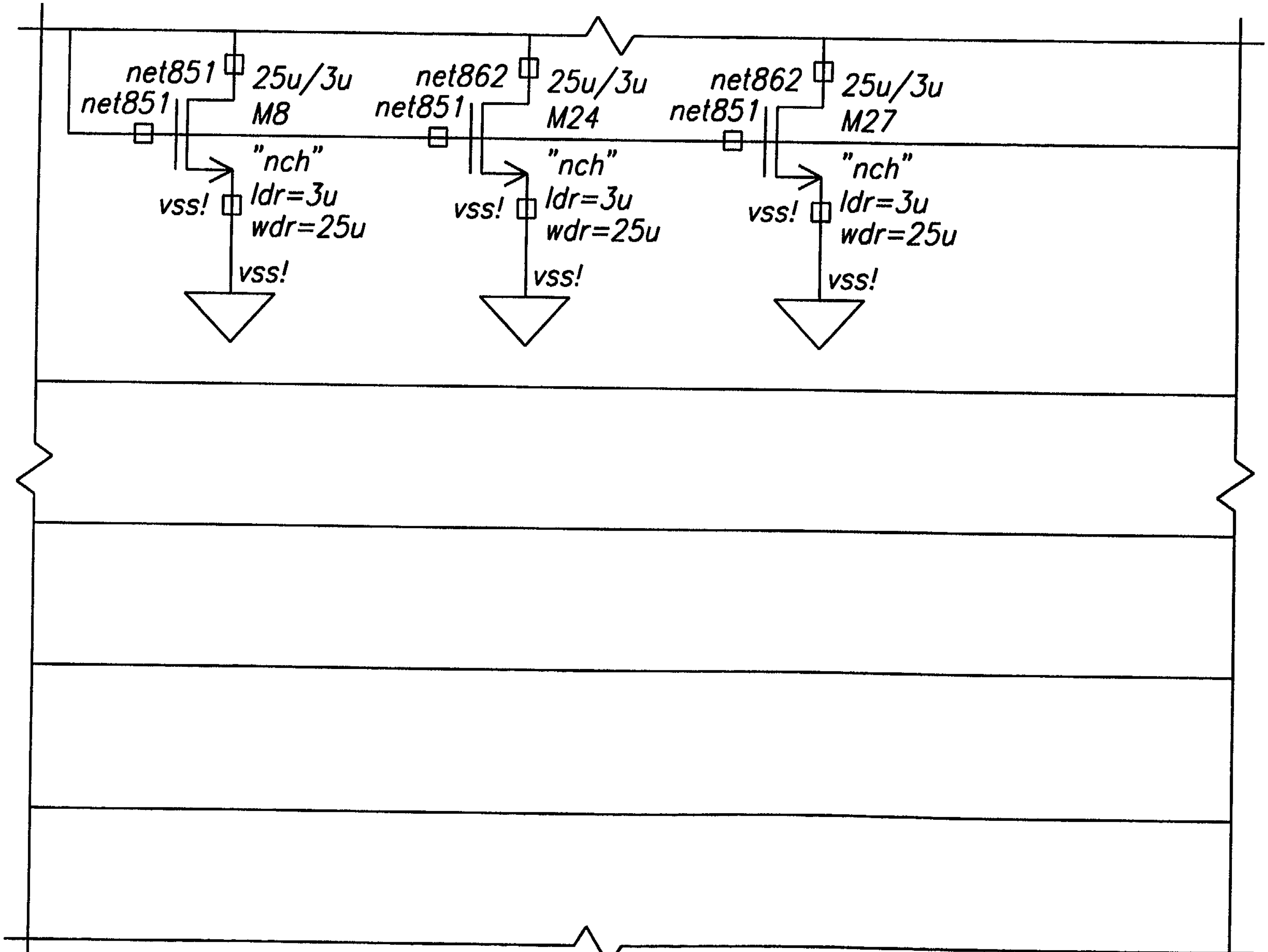

net851
net851
25u/3u
M8
"nch"
vss!
ldr=3u
wdr=25u
vss!
net862
net851
25u/3u
M24
"nch"
vss!
ldr=3u
wdr=25u
vss!
net862
net851
25u/3u
M27
"nch"
vss!
ldr=3u
wdr=25u
vss!

Fig 8.0607CB

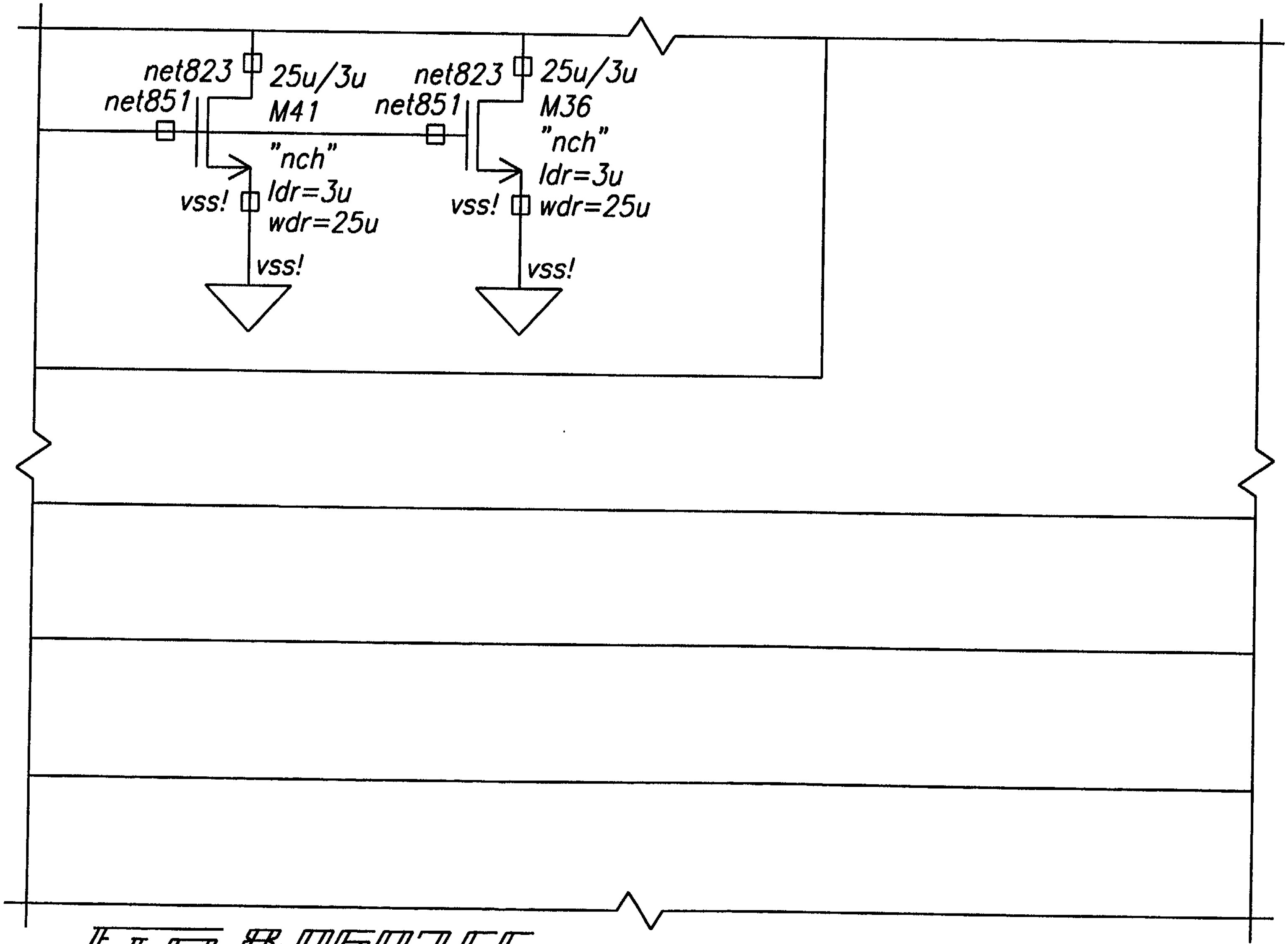

net823
25u/3u
net851
M41
"nch"
vss!
ldr=3u
wdr=25u
vss!
net823
25u/3u
net851
M36
"nch"
vss!
ldr=3u
wdr=25u
vss!

FIG. 8.0607CC

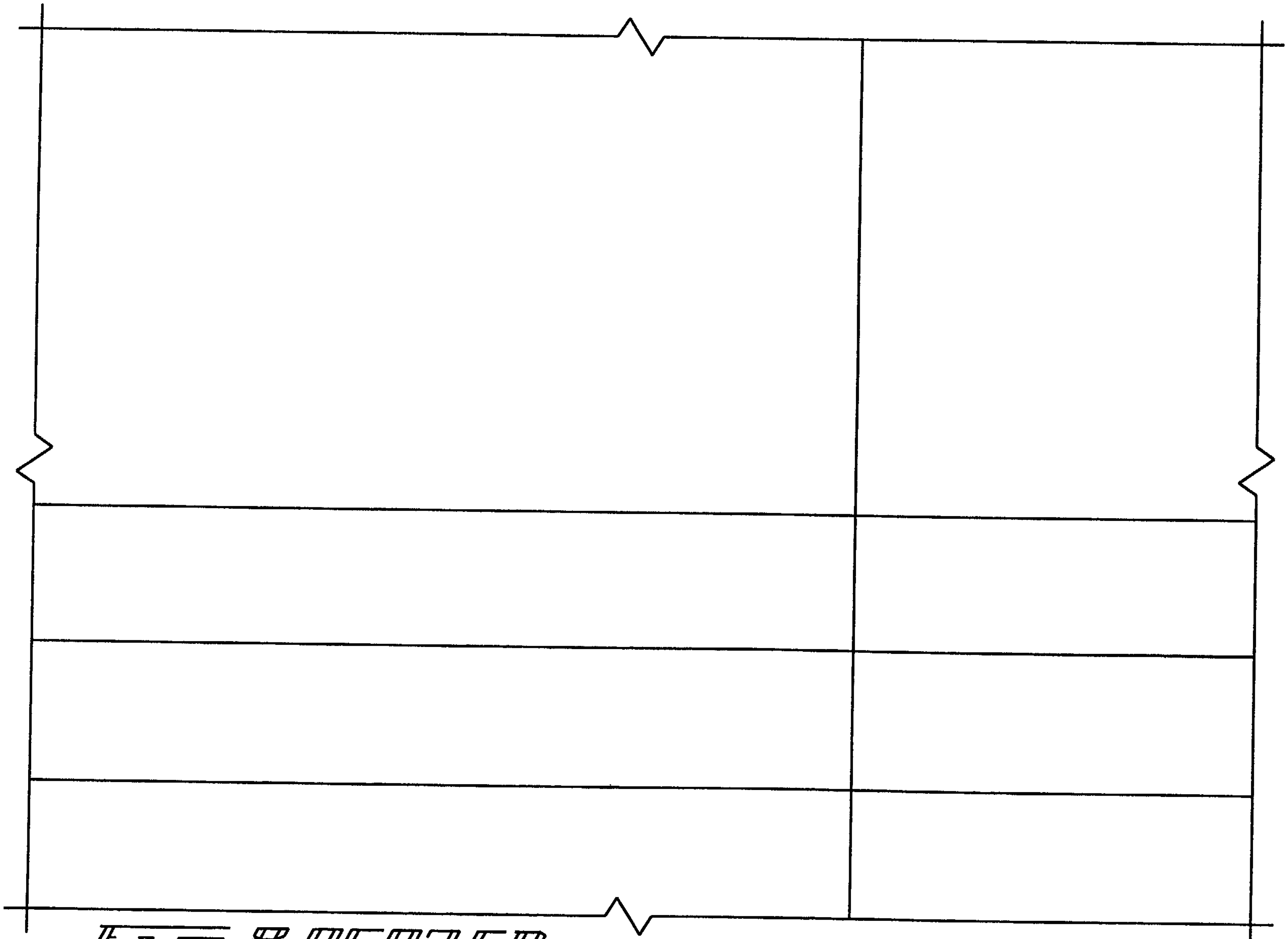


Fig 8.0607CD

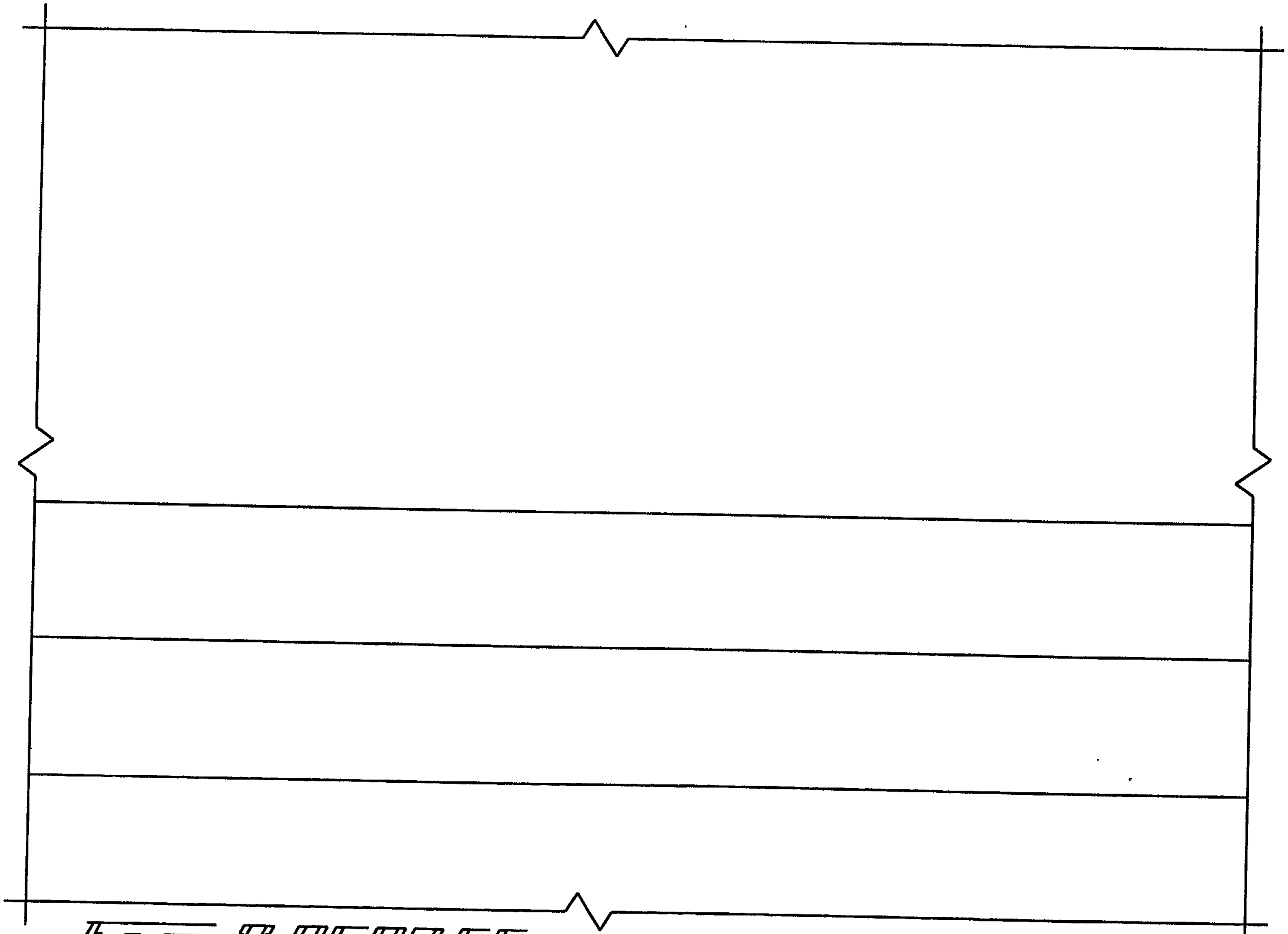


FIG 8.0607CE

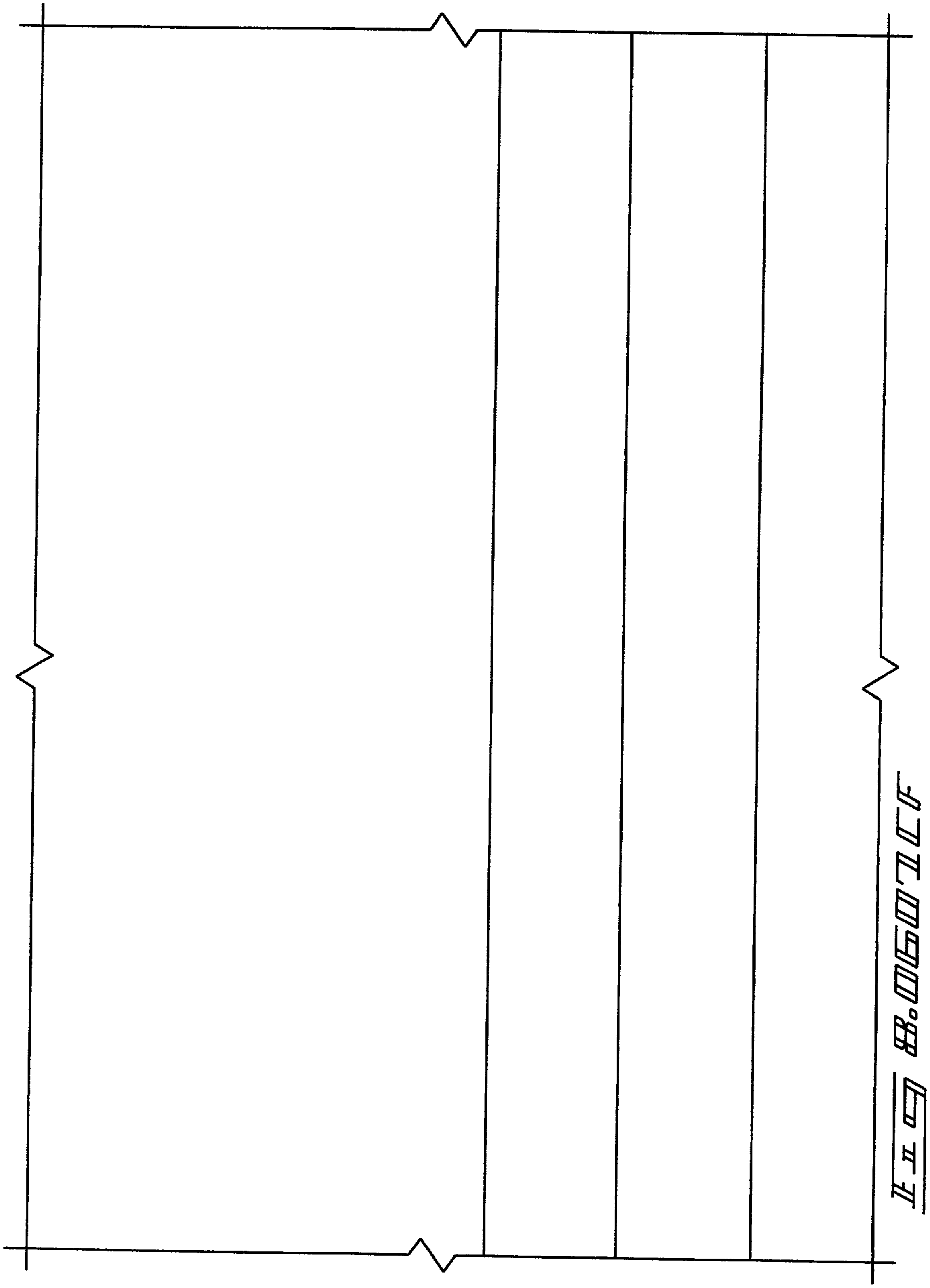


Fig 8.0601CF

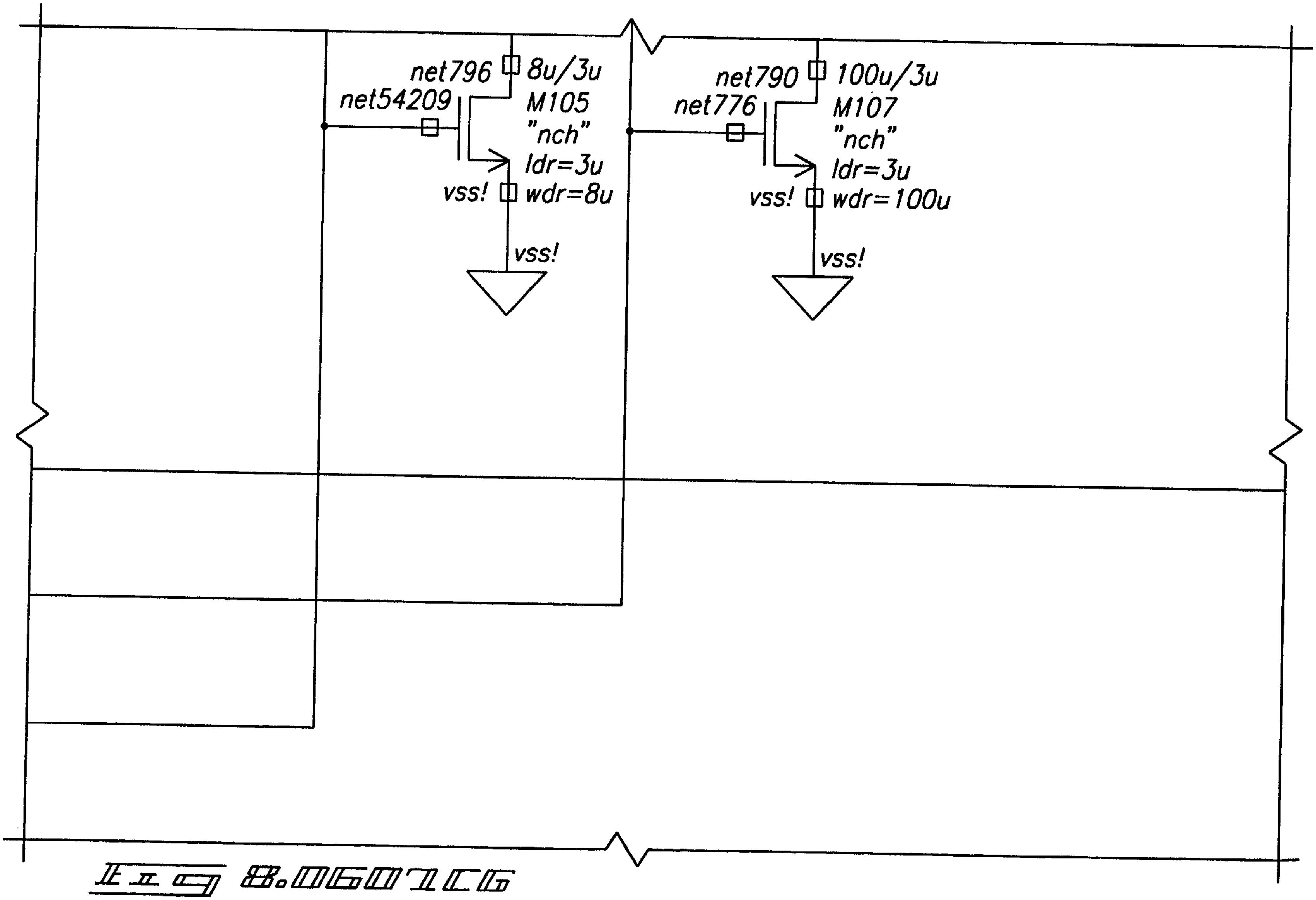

net796
8u/3u
M105
"nch"
net54209
ldr=3u
vss!
wdr=8u
vss!
net790
100u/3u
M107
"nch"
net776
ldr=3u
vss!
wdr=100u
vss!

Fig 8.0601CG

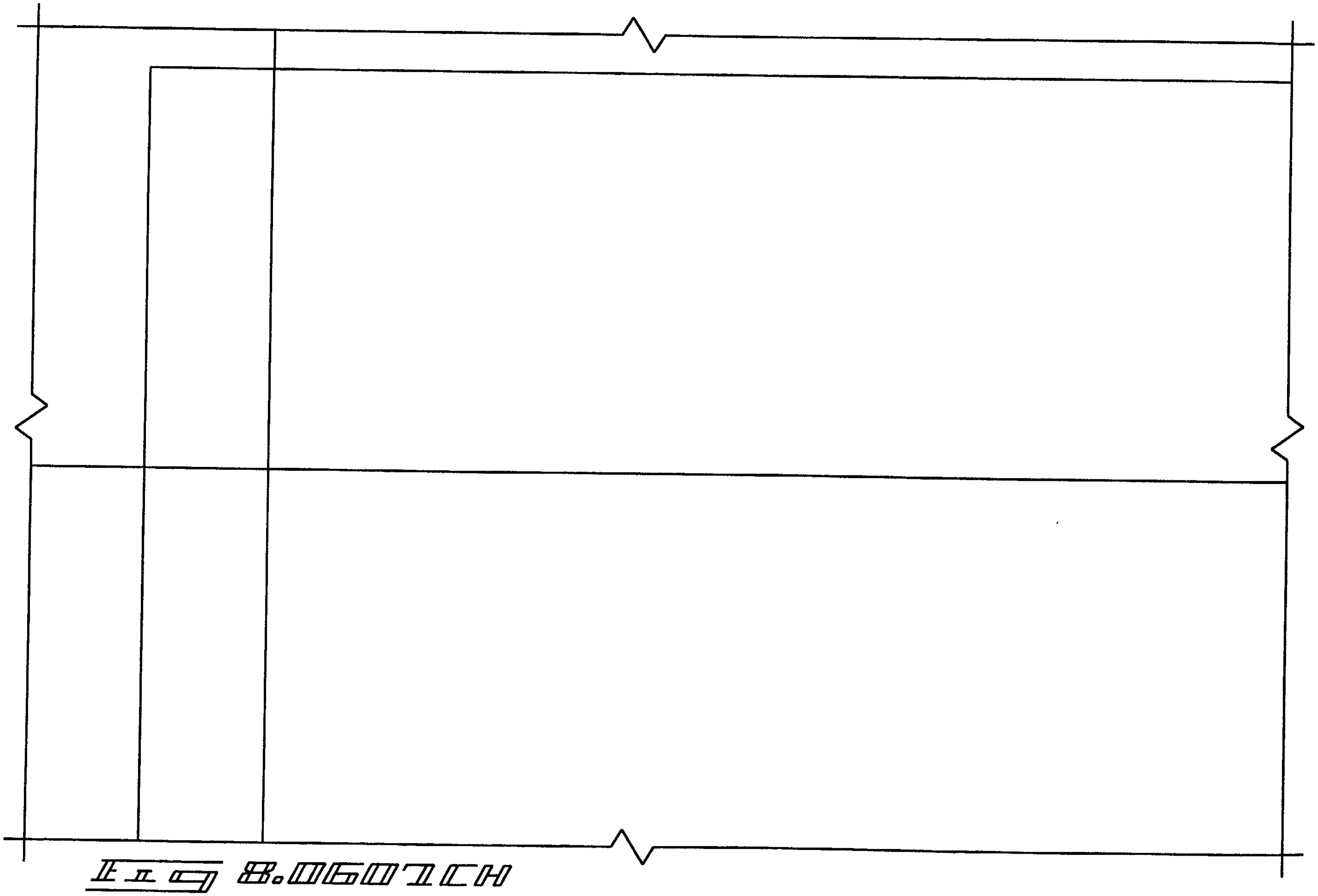


Fig 8.0601CH

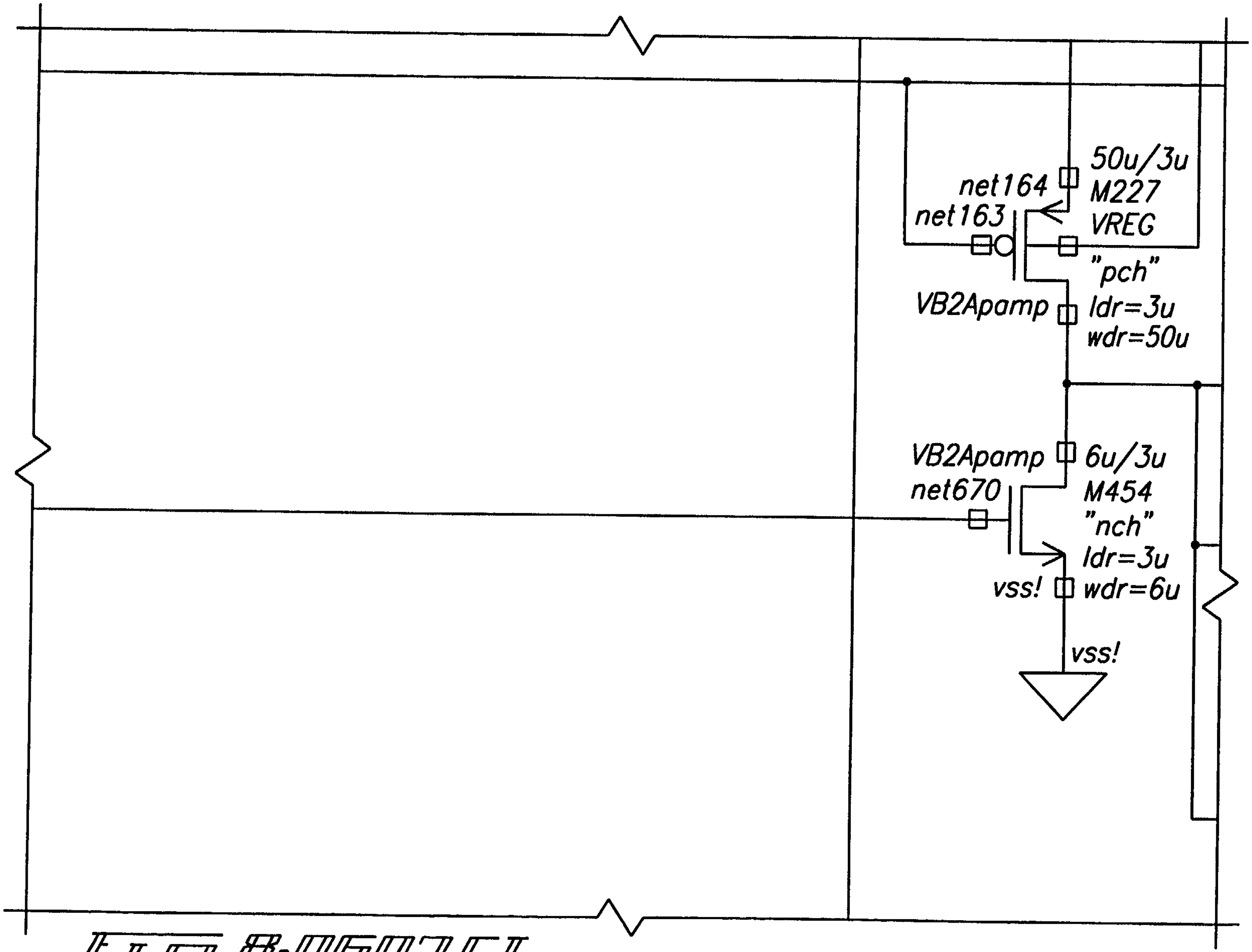
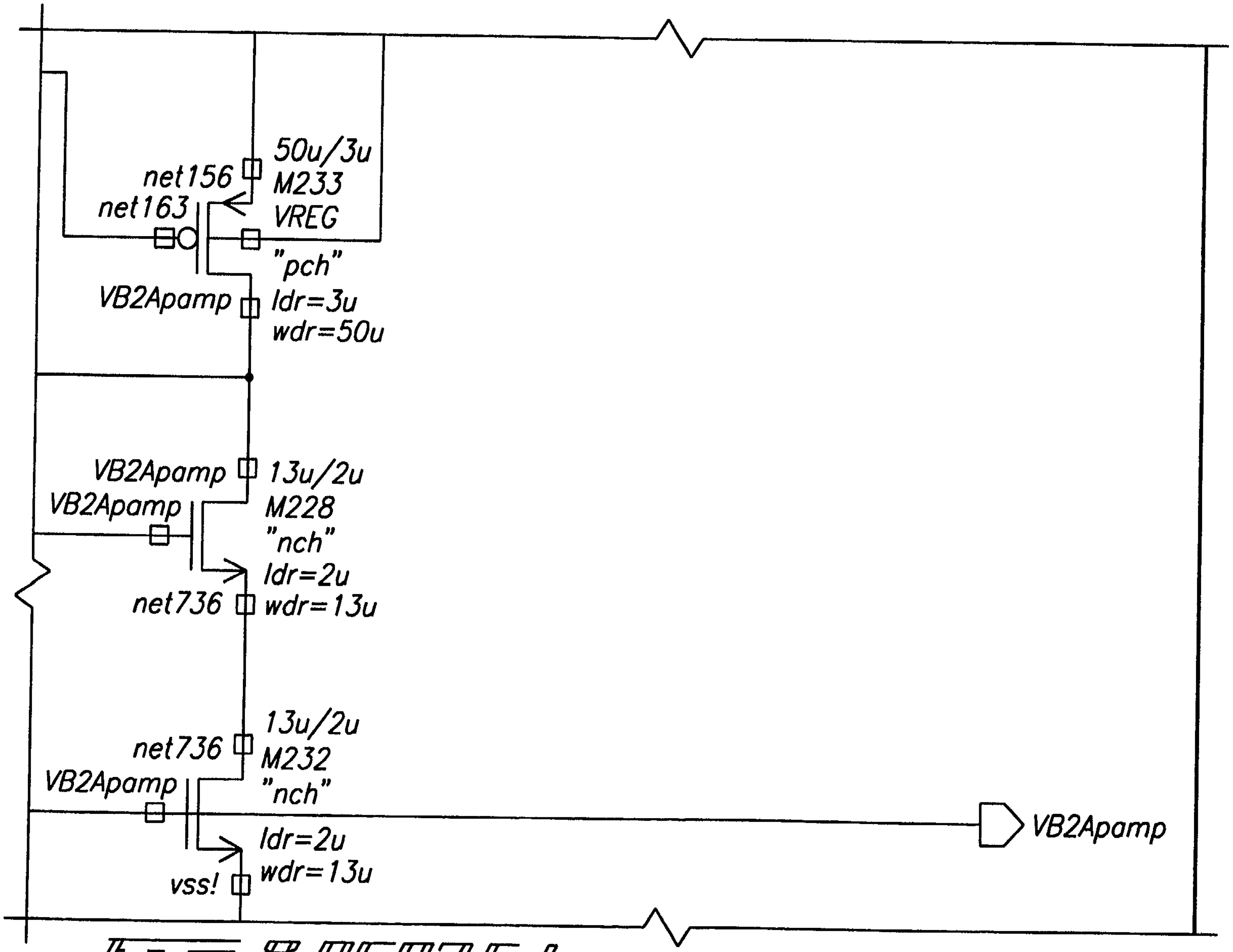

50u/3u
M227
VREG
"pch"
ldr=3u
wdr=50u
net164
net163
VB2Apamp
VB2Apamp
net670
6u/3u
M454
"nch"
ldr=3u
wdr=6u
vss!
vss!

Fig 8.0607CI


50u/3u
M233
VREG
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ldr=3u
wdr=50u
net156
net163
VB2Apamp
VB2Apamp
VB2Apamp
13u/2u
M228
"nch"
ldr=2u
wdr=13u
net736
net736
VB2Apamp
13u/2u
M232
"nch"
ldr=2u
wdr=13u
vss!
VB2Apamp

Fig 8.0607Cd

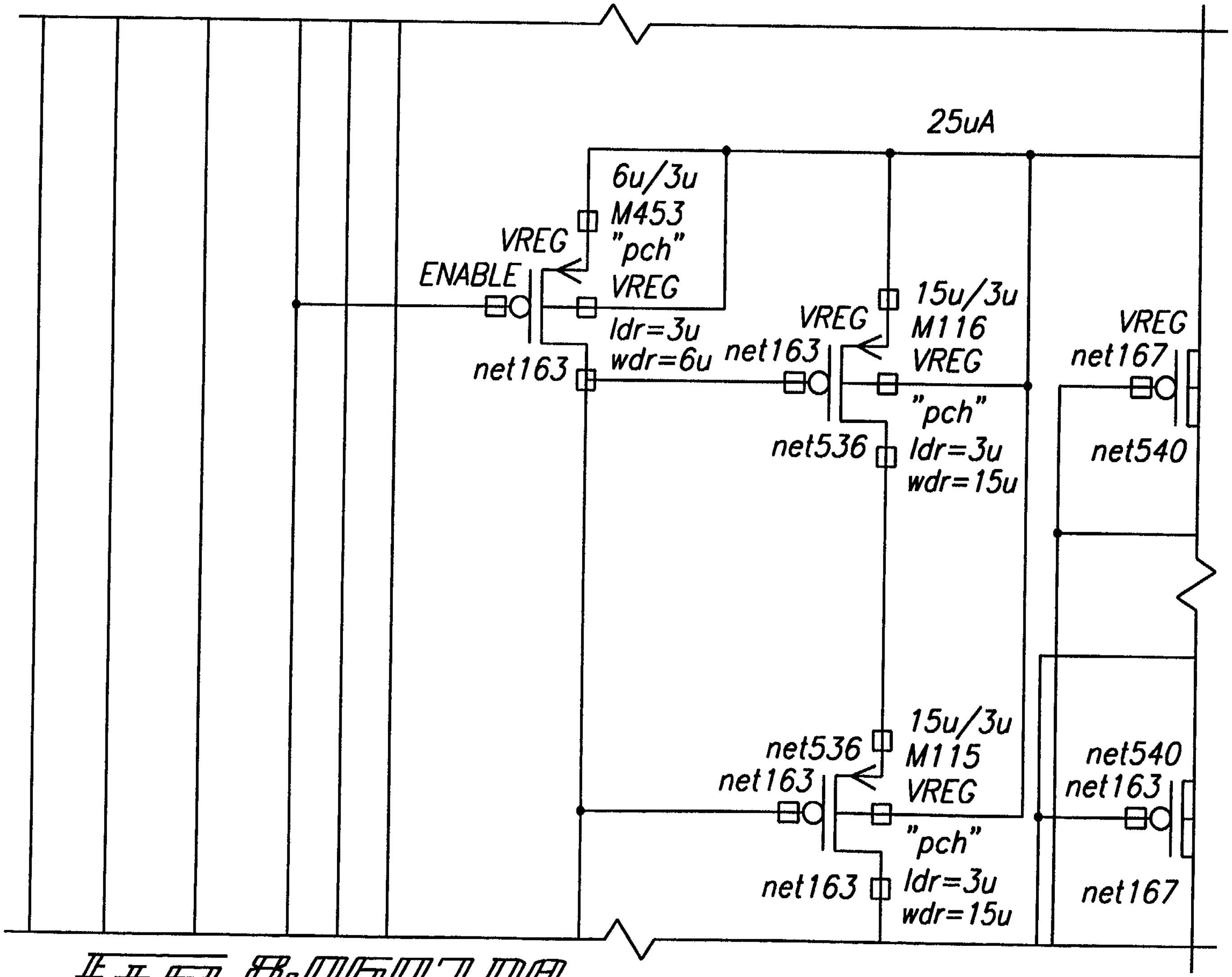

25uA
6u/3u
M453
"pch"
VREG
ldr=3u
wdr=6u
VREG
ENABLE
net163
15u/3u
M116
VREG
"pch"
ldr=3u
wdr=15u
VREG
net163
net536
VREG
net167
net540
15u/3u
M115
VREG
"pch"
ldr=3u
wdr=15u
net536
net163
net163
net540
net163
net167

Fig 8.0601DA

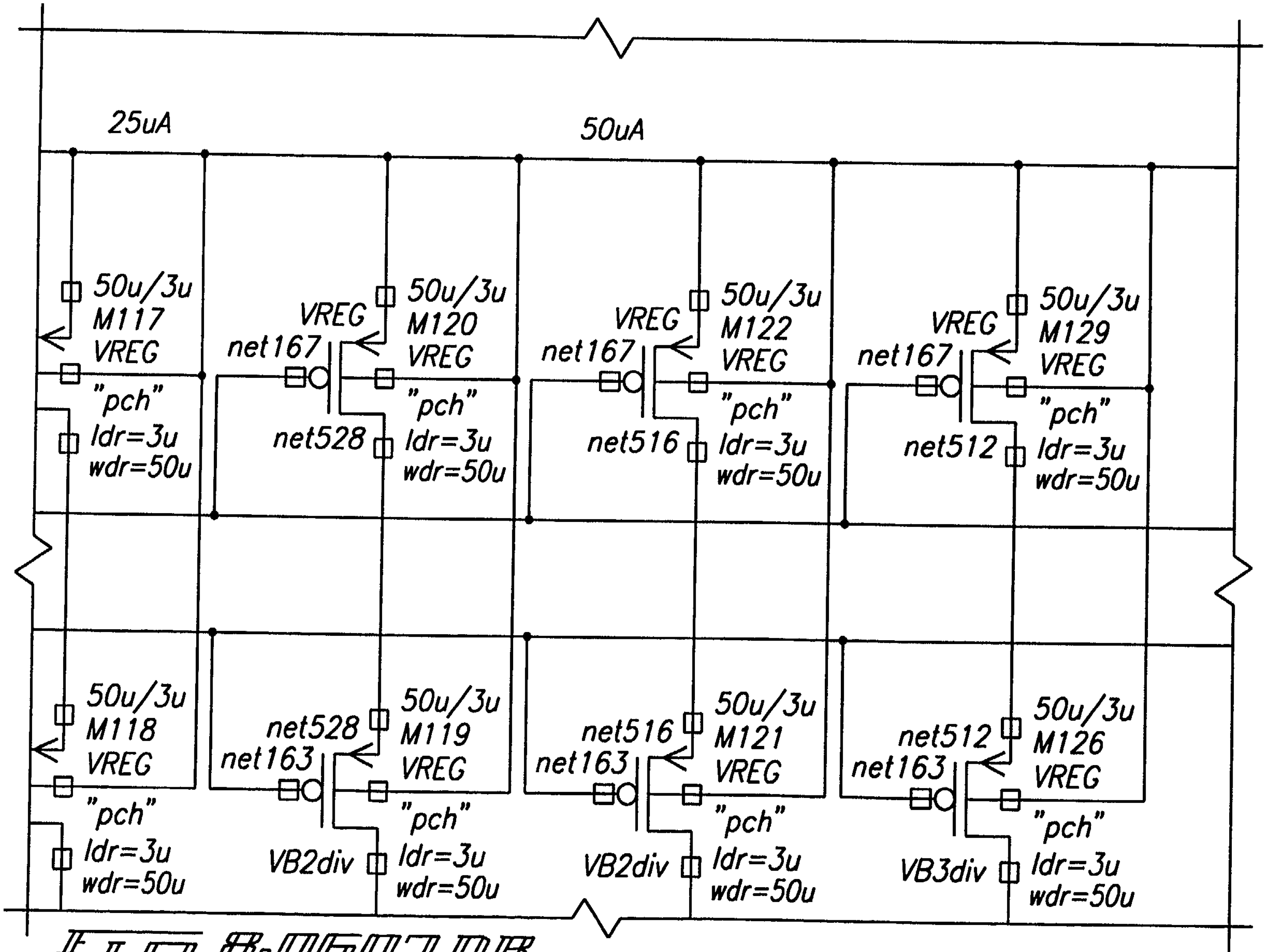

25uA
50uA
50u/3u
M117
VREG
"pch"
ldr=3u
wdr=50u
VREG
net167
50u/3u
M120
VREG
"pch"
net528
ldr=3u
wdr=50u
VREG
net167
50u/3u
M122
VREG
"pch"
net516
ldr=3u
wdr=50u
VREG
net167
50u/3u
M129
VREG
"pch"
net512
ldr=3u
wdr=50u
50u/3u
M118
VREG
"pch"
ldr=3u
wdr=50u
net528
net163
50u/3u
M119
VREG
"pch"
VB2div
ldr=3u
wdr=50u
net516
net163
50u/3u
M121
VREG
"pch"
VB2div
ldr=3u
wdr=50u
net512
net163
50u/3u
M126
VREG
"pch"
VB3div
ldr=3u
wdr=50u

Fig 8.0607DB

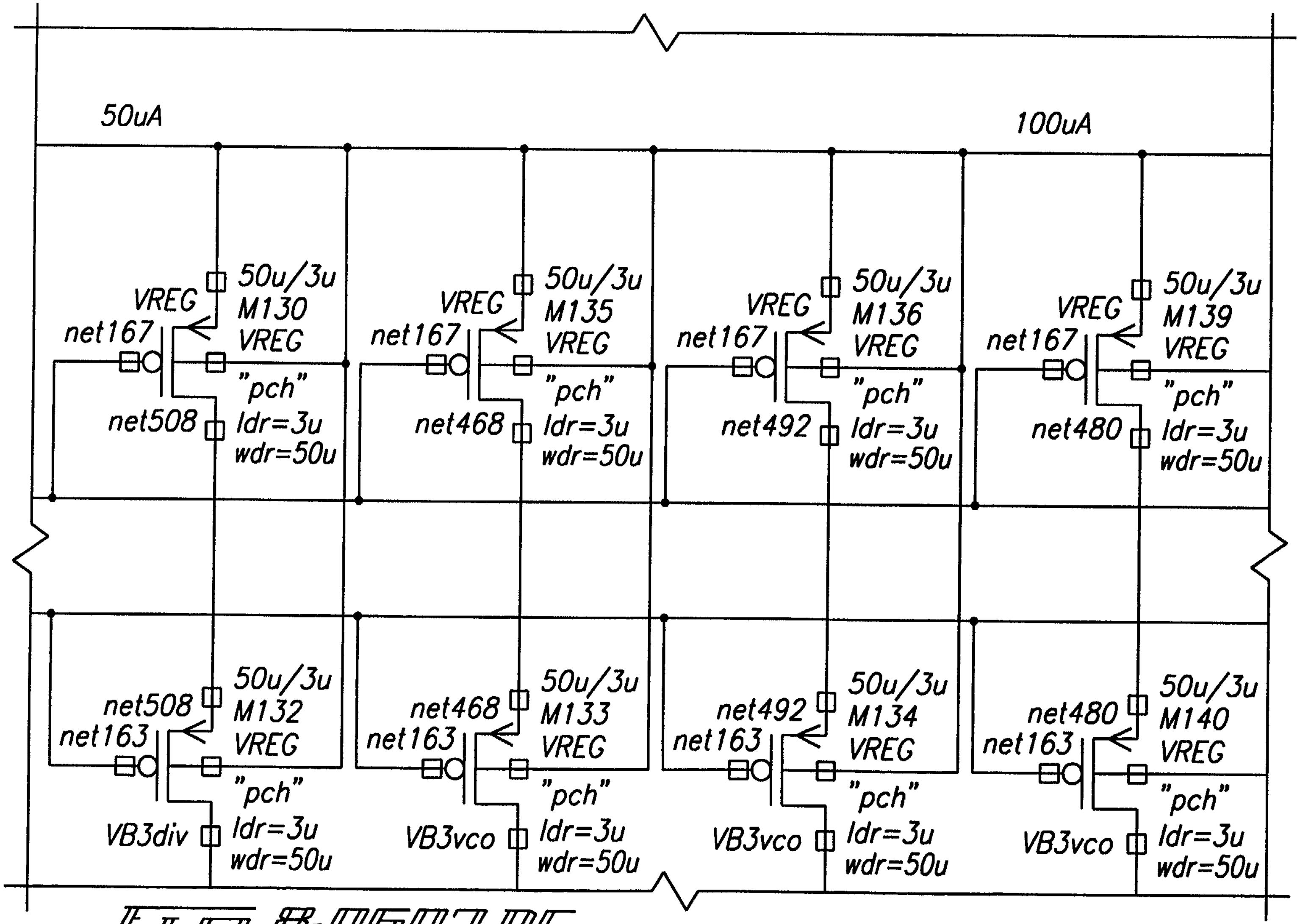

50uA
100uA
VREG
net167
50u/3u
M130
VREG
"pch"
net508
ldr=3u
wdr=50u
VREG
net167
50u/3u
M135
VREG
"pch"
net468
ldr=3u
wdr=50u
VREG
net167
50u/3u
M136
VREG
"pch"
net492
ldr=3u
wdr=50u
VREG
net167
50u/3u
M139
VREG
"pch"
net480
ldr=3u
wdr=50u
net508
net163
50u/3u
M132
VREG
"pch"
VB3div
ldr=3u
wdr=50u
net468
net163
50u/3u
M133
VREG
"pch"
VB3vco
ldr=3u
wdr=50u
net492
net163
50u/3u
M134
VREG
"pch"
VB3vco
ldr=3u
wdr=50u
net480
net163
50u/3u
M140
VREG
"pch"
VB3vco
ldr=3u
wdr=50u

Fig 8.0607DC

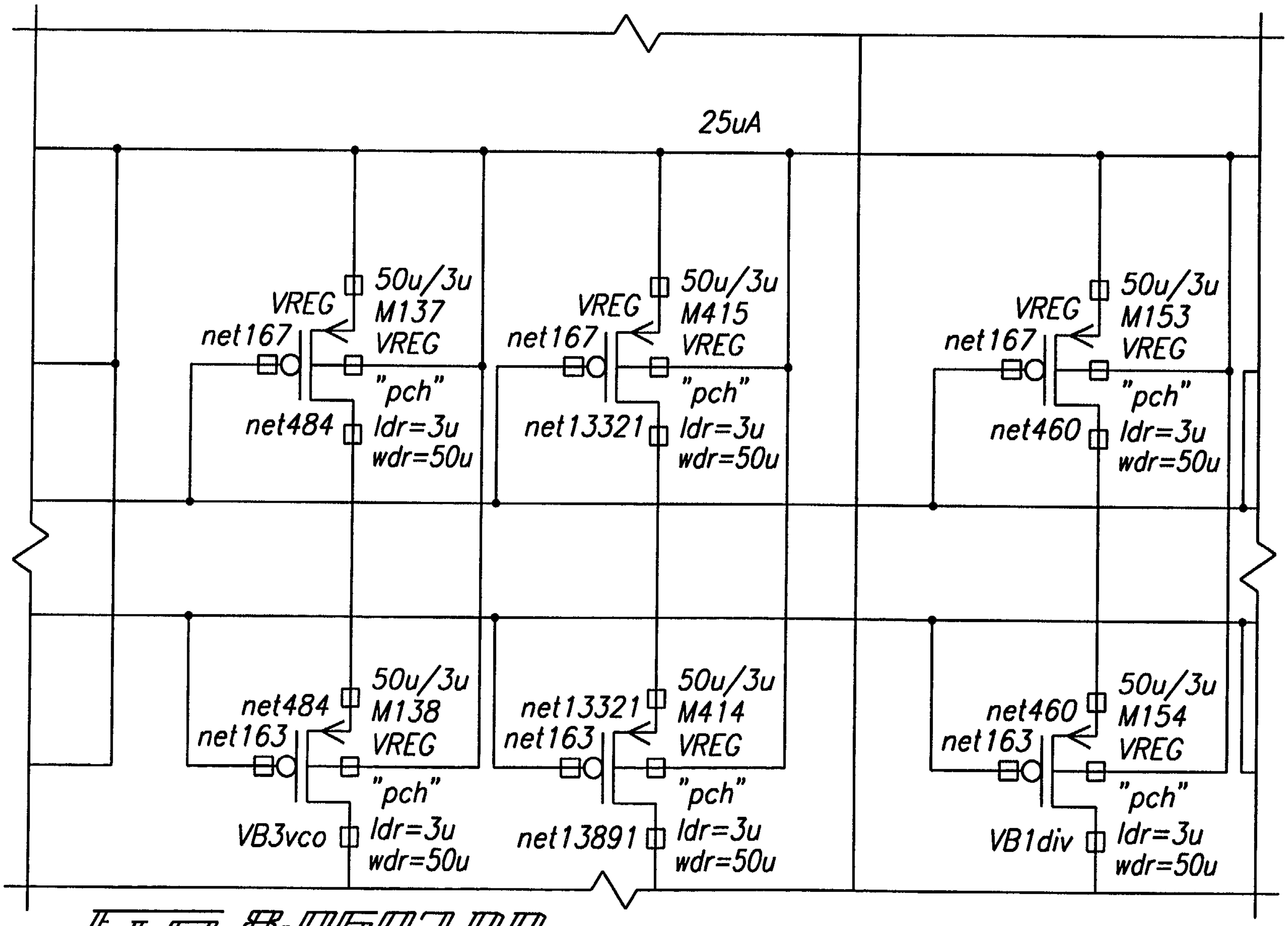

25uA
VREG
net167
50u/3u
M137
VREG
"pch"
net484
ldr=3u
wdr=50u
VREG
net167
50u/3u
M415
VREG
"pch"
net13321
ldr=3u
wdr=50u
VREG
net167
50u/3u
M153
VREG
"pch"
net460
ldr=3u
wdr=50u
net484
net163
50u/3u
M138
VREG
"pch"
VB3vco
ldr=3u
wdr=50u
net13321
net163
50u/3u
M414
VREG
"pch"
net13891
ldr=3u
wdr=50u
net460
net163
50u/3u
M154
VREG
"pch"
VB1div
ldr=3u
wdr=50u

Fig 8.060700

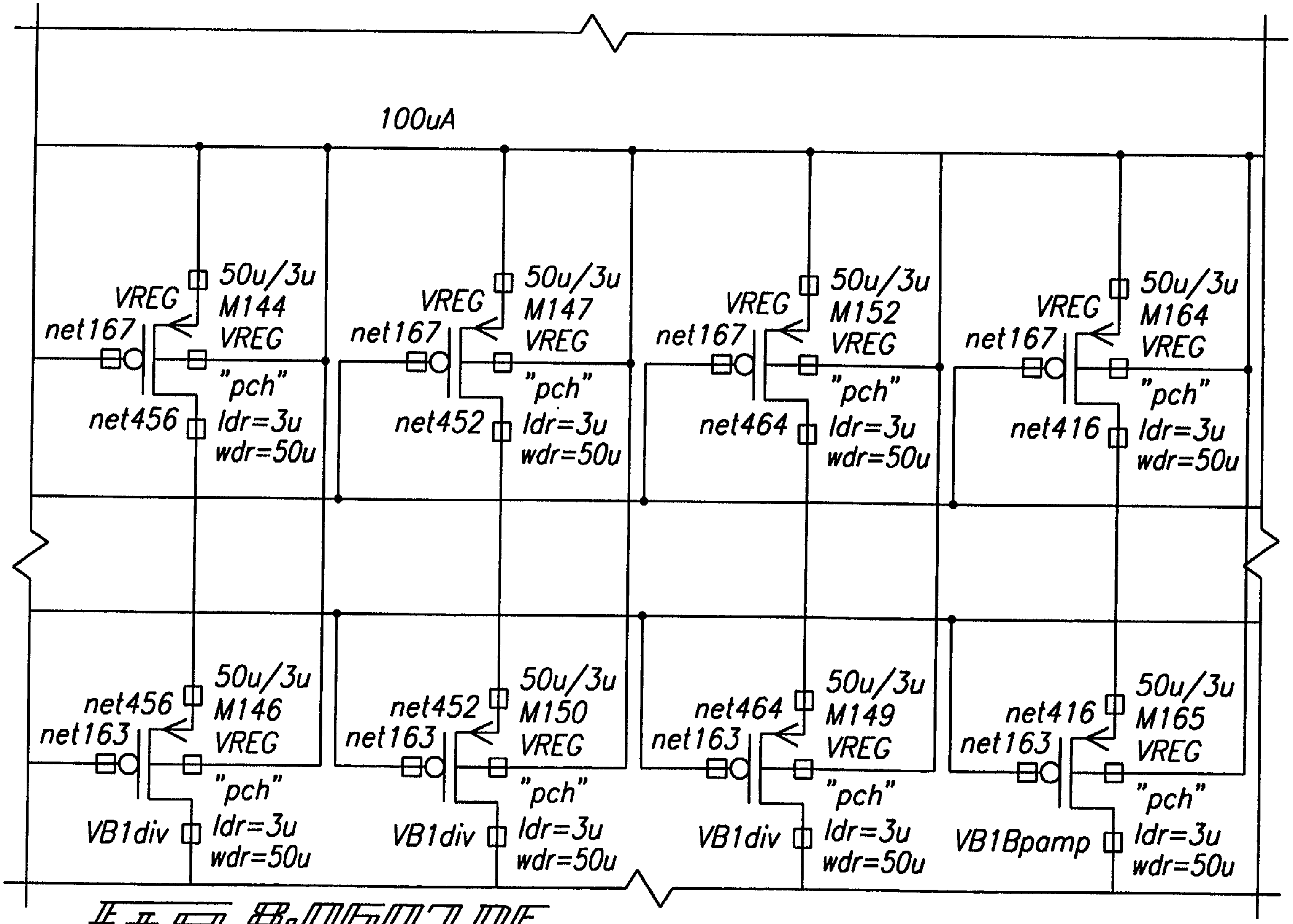

100uA
VREG
net167
50u/3u
M144
VREG
"pch"
net456
ldr=3u
wdr=50u
net167
M147
net452
M152
net464
M164
net416
net163
M146
VB1div
M150
M149
M165
VB1Bpamp

Fig 8.0601DE

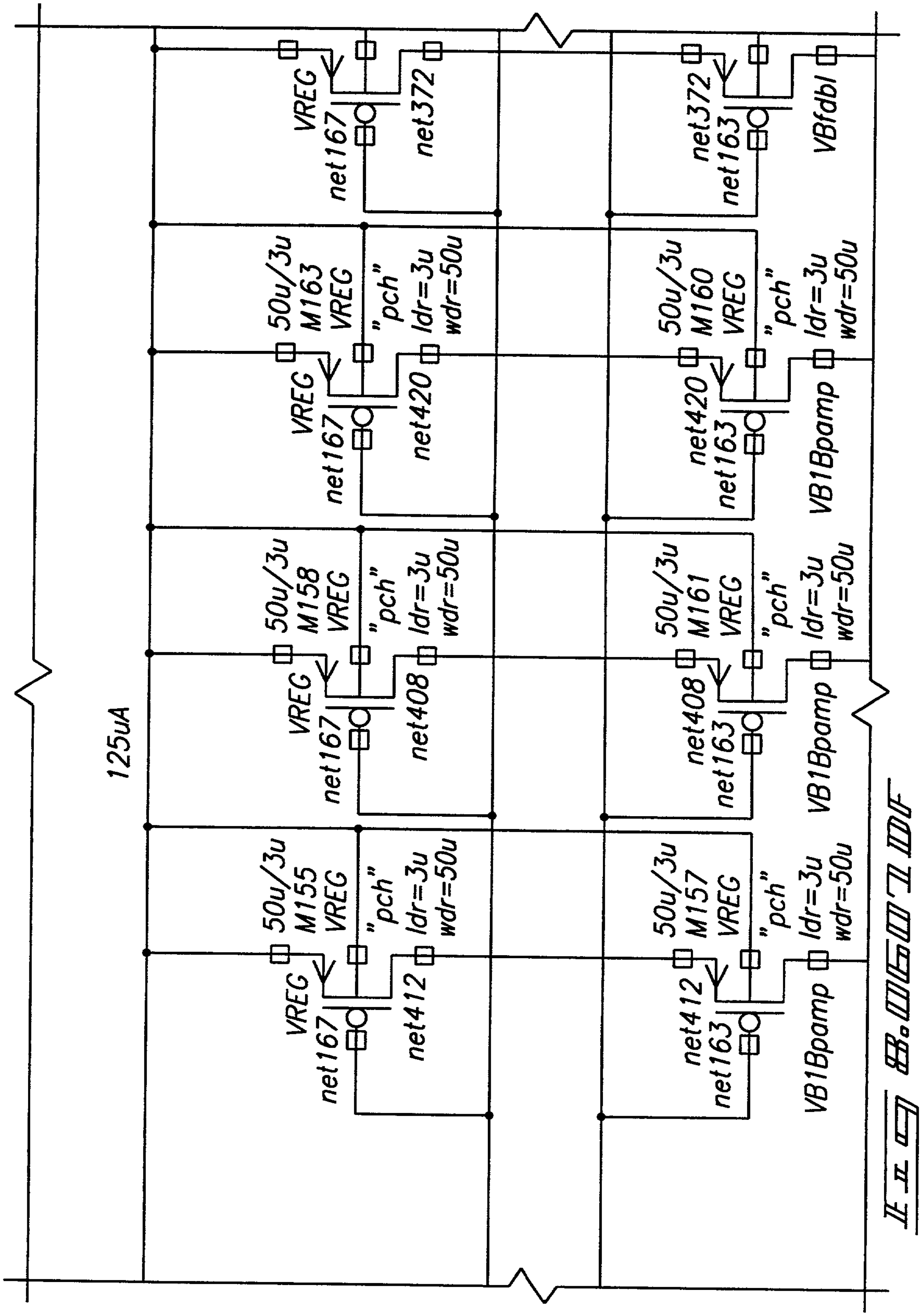

125uA
VREG
net167
net372
net372
net163
VBfdbl
50u/3u
M163
VREG
"pch"
ldr=3u
wdr=50u
VREG
net167
net420
50u/3u
M160
VREG
"pch"
ldr=3u
wdr=50u
net420
net163
VB1Bpamp
50u/3u
M158
VREG
"pch"
ldr=3u
wdr=50u
VREG
net167
net408
50u/3u
M161
VREG
"pch"
ldr=3u
wdr=50u
net408
net163
VB1Bpamp
50u/3u
M155
VREG
"pch"
ldr=3u
wdr=50u
VREG
net167
net412
50u/3u
M157
VREG
"pch"
ldr=3u
wdr=50u
net412
net163
VB1Bpamp

FIG. 8.0607DF

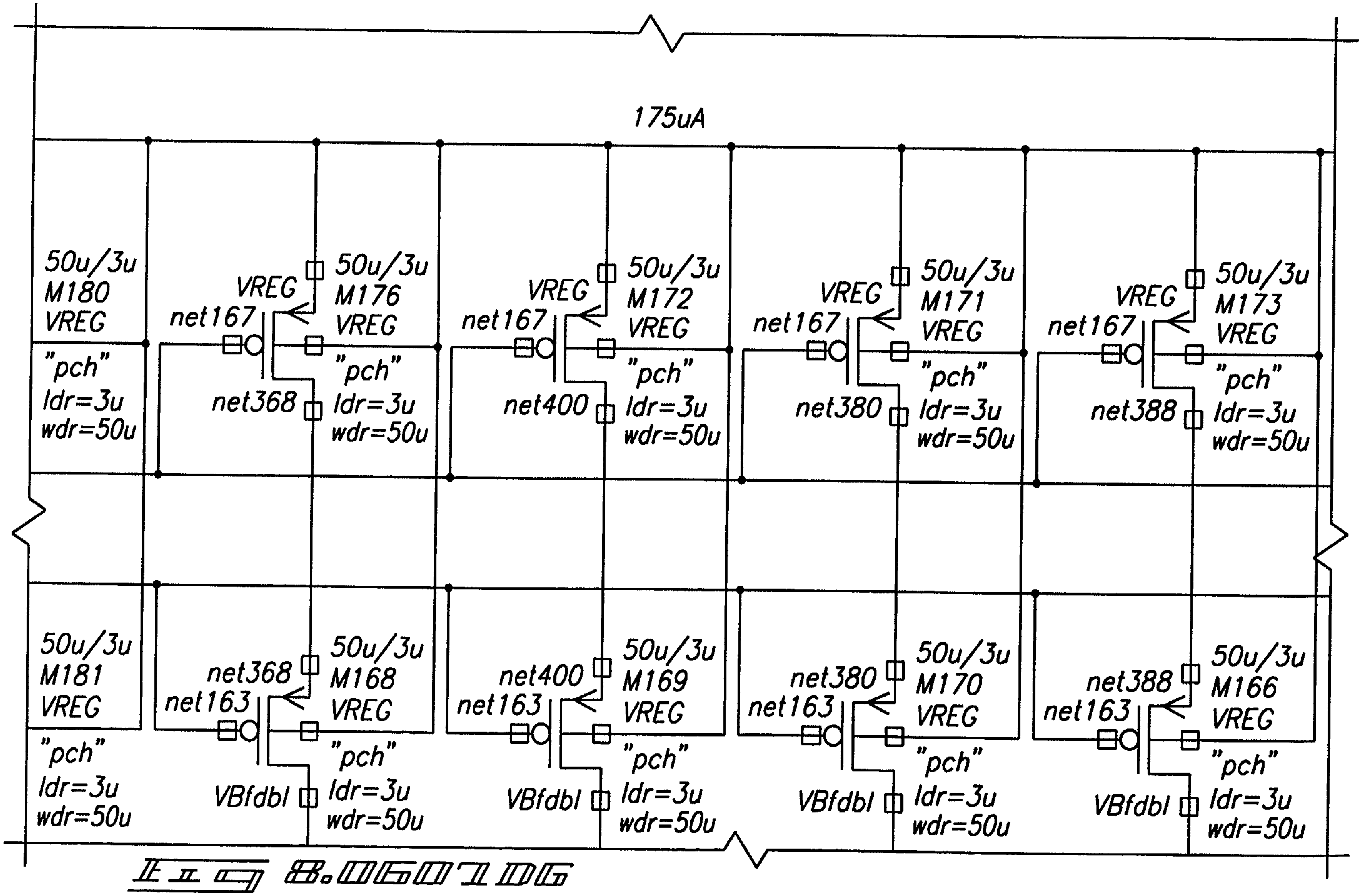

175uA
50u/3u
M180
VREG
"pch"
ldr=3u
wdr=50u
VREG
net167
net368
50u/3u
M176
VREG
"pch"
ldr=3u
wdr=50u
VREG
net167
net400
50u/3u
M172
VREG
"pch"
ldr=3u
wdr=50u
VREG
net167
net380
50u/3u
M171
VREG
"pch"
ldr=3u
wdr=50u
VREG
net167
net388
50u/3u
M173
VREG
"pch"
ldr=3u
wdr=50u
50u/3u
M181
VREG
"pch"
ldr=3u
wdr=50u
net368
net163
VBfdbl
50u/3u
M168
VREG
"pch"
ldr=3u
wdr=50u
net400
net163
VBfdbl
50u/3u
M169
VREG
"pch"
ldr=3u
wdr=50u
net380
net163
VBfdbl
50u/3u
M170
VREG
"pch"
ldr=3u
wdr=50u
net388
net163
VBfdbl
50u/3u
M166
VREG
"pch"
ldr=3u
wdr=50u

FIG 8.0601DG

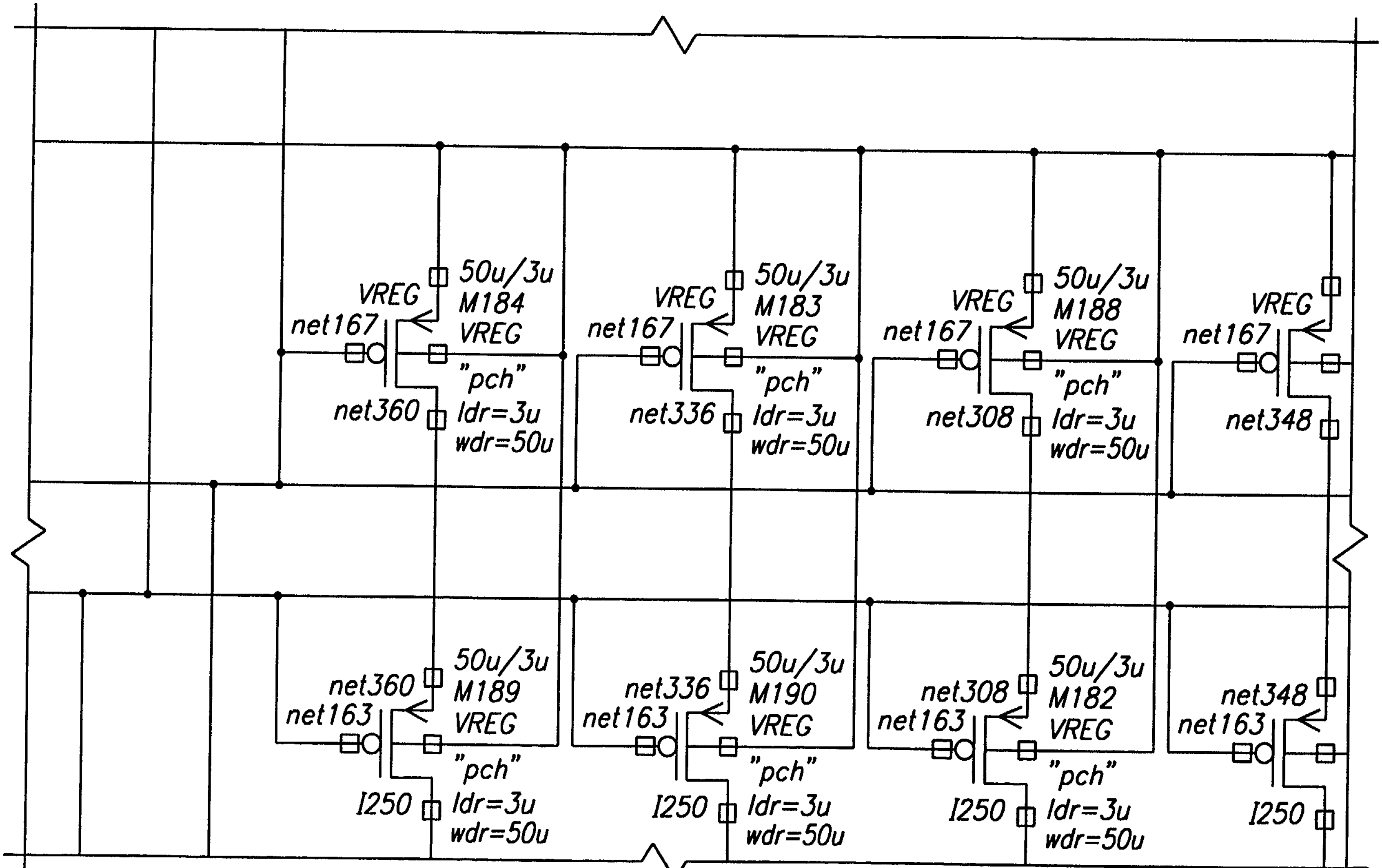

VREG
net167
50u/3u
M184
VREG
"pch"
net360
ldr=3u
wdr=50u
VREG
net167
50u/3u
M183
VREG
"pch"
net336
ldr=3u
wdr=50u
VREG
net167
50u/3u
M188
VREG
"pch"
net308
ldr=3u
wdr=50u
VREG
net167
net348
net360
net163
50u/3u
M189
VREG
"pch"
I250
ldr=3u
wdr=50u
net336
net163
50u/3u
M190
VREG
"pch"
I250
ldr=3u
wdr=50u
net308
net163
50u/3u
M182
VREG
"pch"
I250
ldr=3u
wdr=50u
net348
net163
I250

Fig 8.0607DH

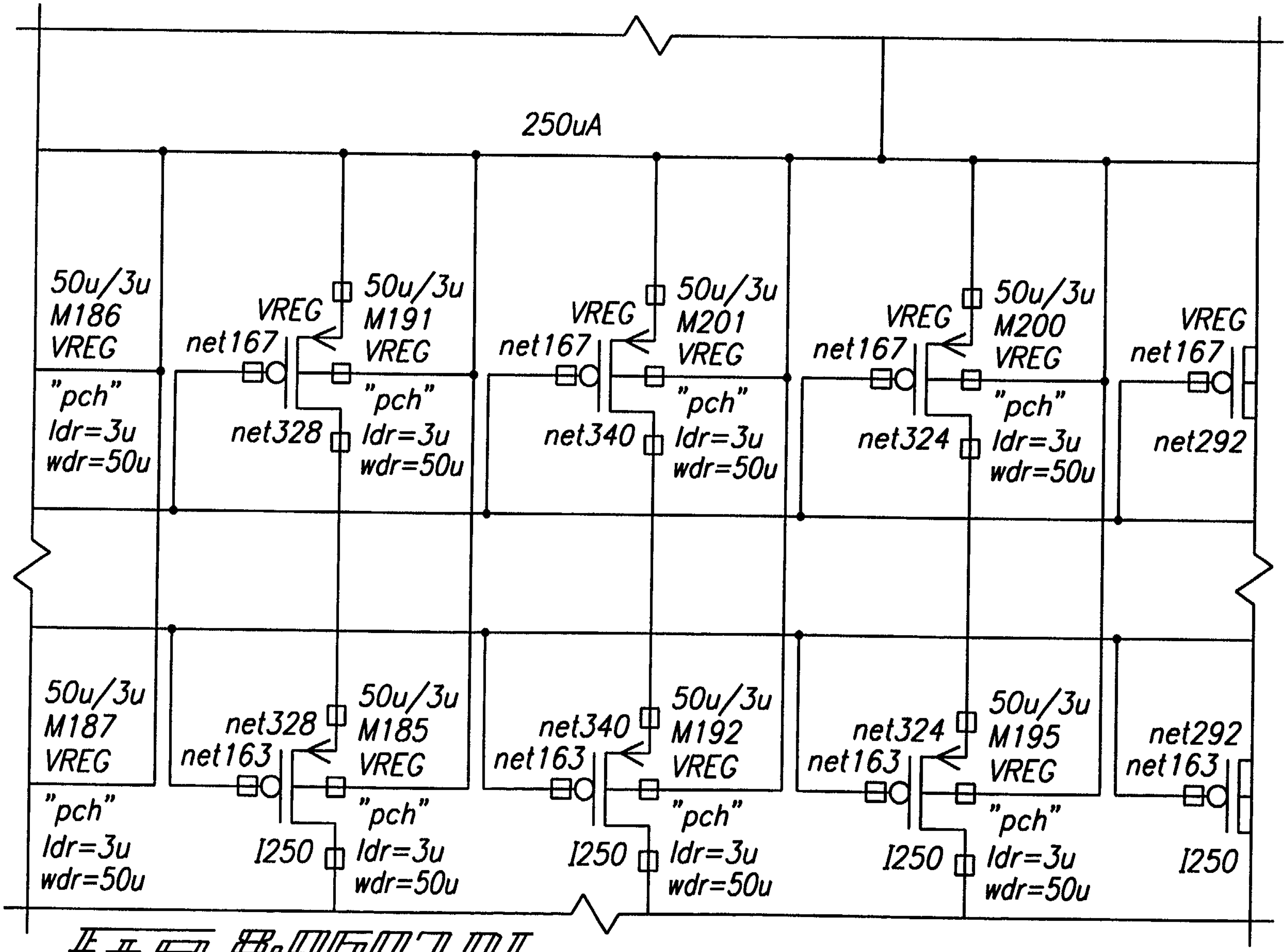

250uA
50u/3u
M186
VREG
"pch"
ldr=3u
wdr=50u
VREG
net167
net328
50u/3u
M191
VREG
"pch"
ldr=3u
wdr=50u
VREG
net167
net340
50u/3u
M201
VREG
"pch"
ldr=3u
wdr=50u
VREG
net167
net324
50u/3u
M200
VREG
"pch"
ldr=3u
wdr=50u
VREG
net167
net292
50u/3u
M187
VREG
"pch"
ldr=3u
wdr=50u
net328
net163
I250
50u/3u
M185
VREG
"pch"
ldr=3u
wdr=50u
net340
net163
I250
50u/3u
M192
VREG
"pch"
ldr=3u
wdr=50u
net324
net163
I250
50u/3u
M195
VREG
"pch"
ldr=3u
wdr=50u
net292
net163
I250

Fig 8.0607DI

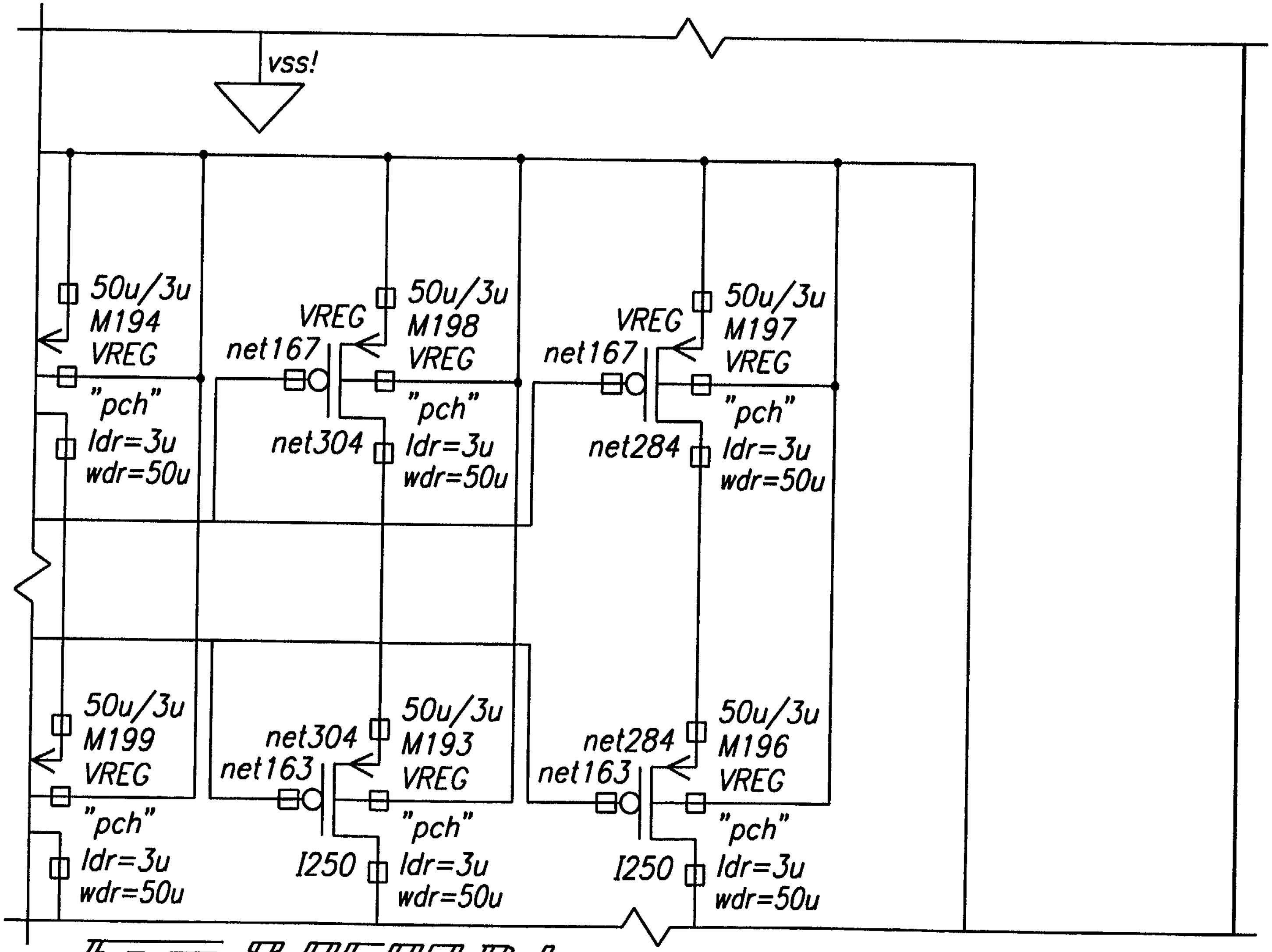


Fig 8.060710J

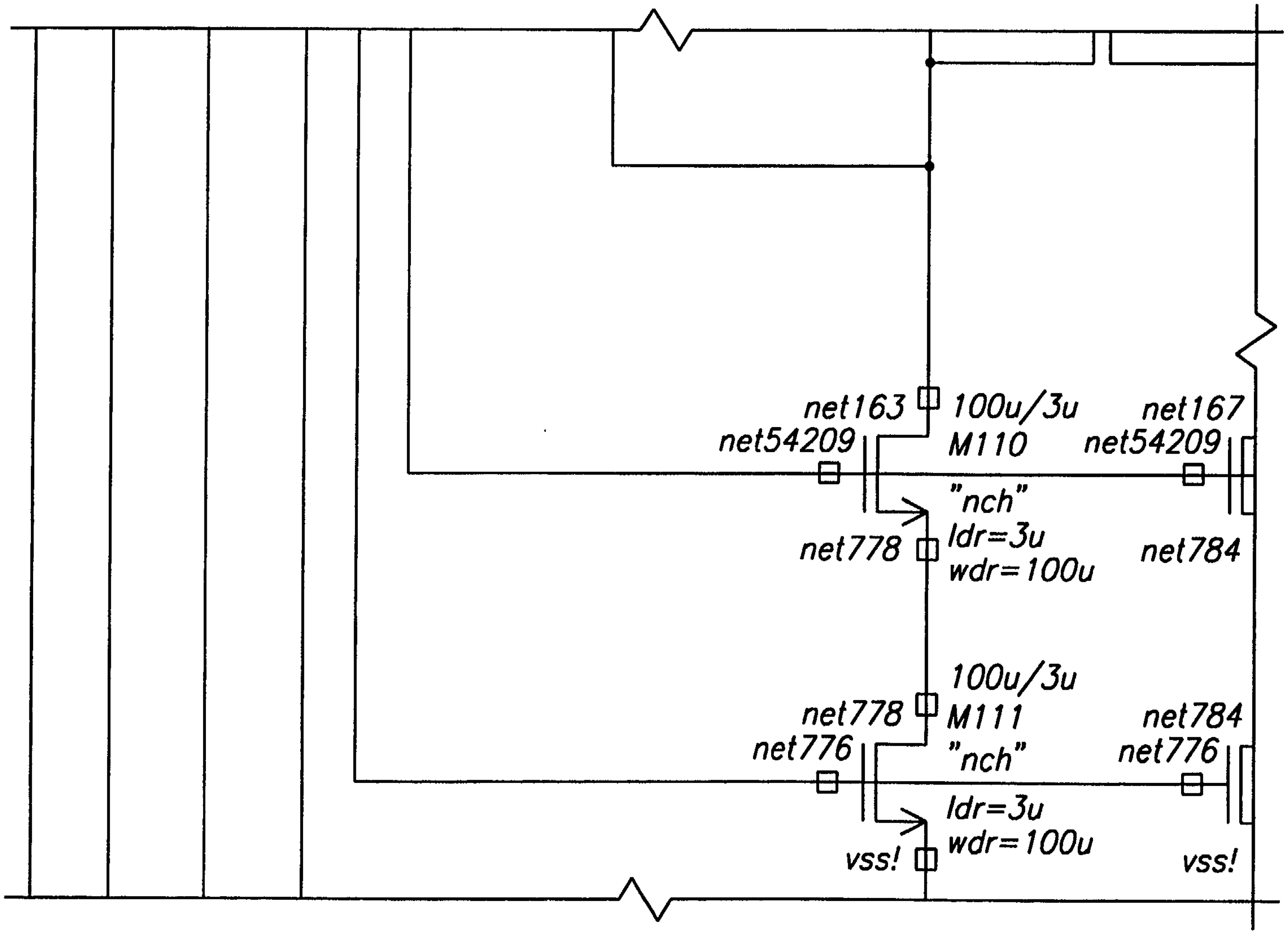
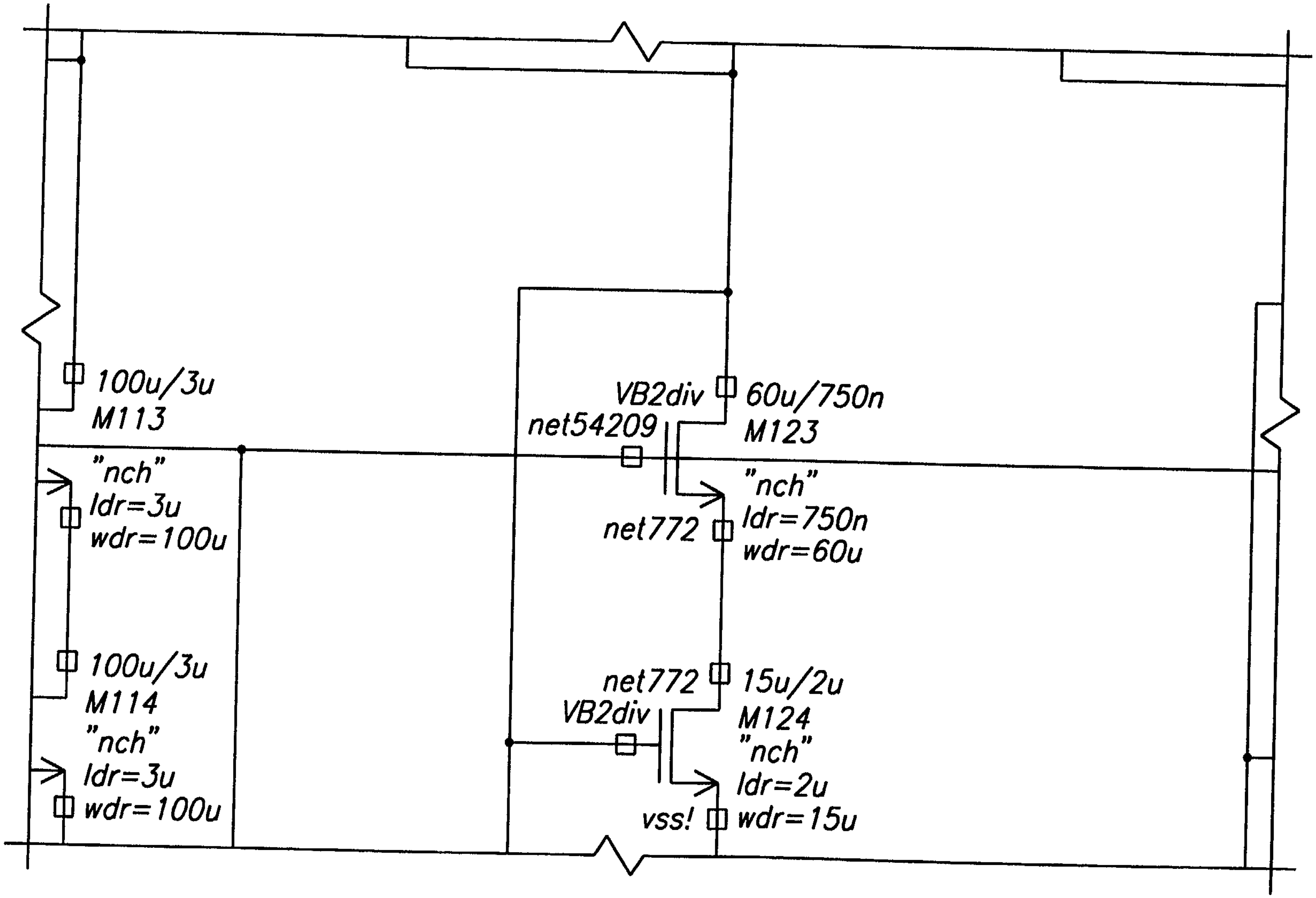

net163
100u/3u
M110
net54209
"nch"
ldr=3u
wdr=100u
net778
net167
net54209
net784
100u/3u
net778
M111
"nch"
net776
ldr=3u
wdr=100u
vss!
net784
net776
vss!

FIG 8.0601EA



100u/3u
M113
"nch"
ldr=3u
wdr=100u
100u/3u
M114
"nch"
ldr=3u
wdr=100u
VB2div
net54209
60u/750n
M123
"nch"
ldr=750n
wdr=60u
net772
net772
VB2div
15u/2u
M124
"nch"
ldr=2u
wdr=15u
vss!

FIG. 8.0607EB

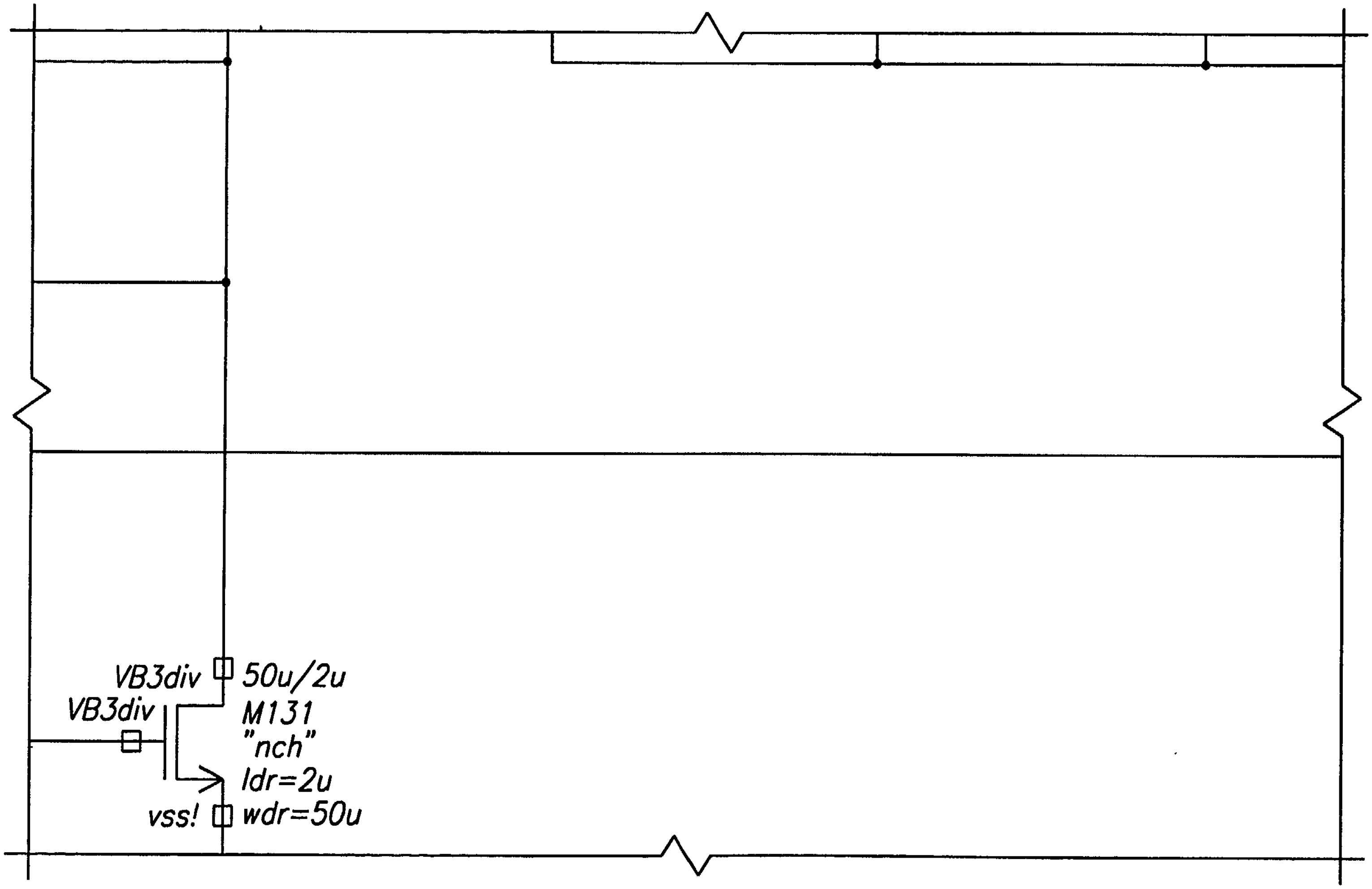


Fig 8.0601EC

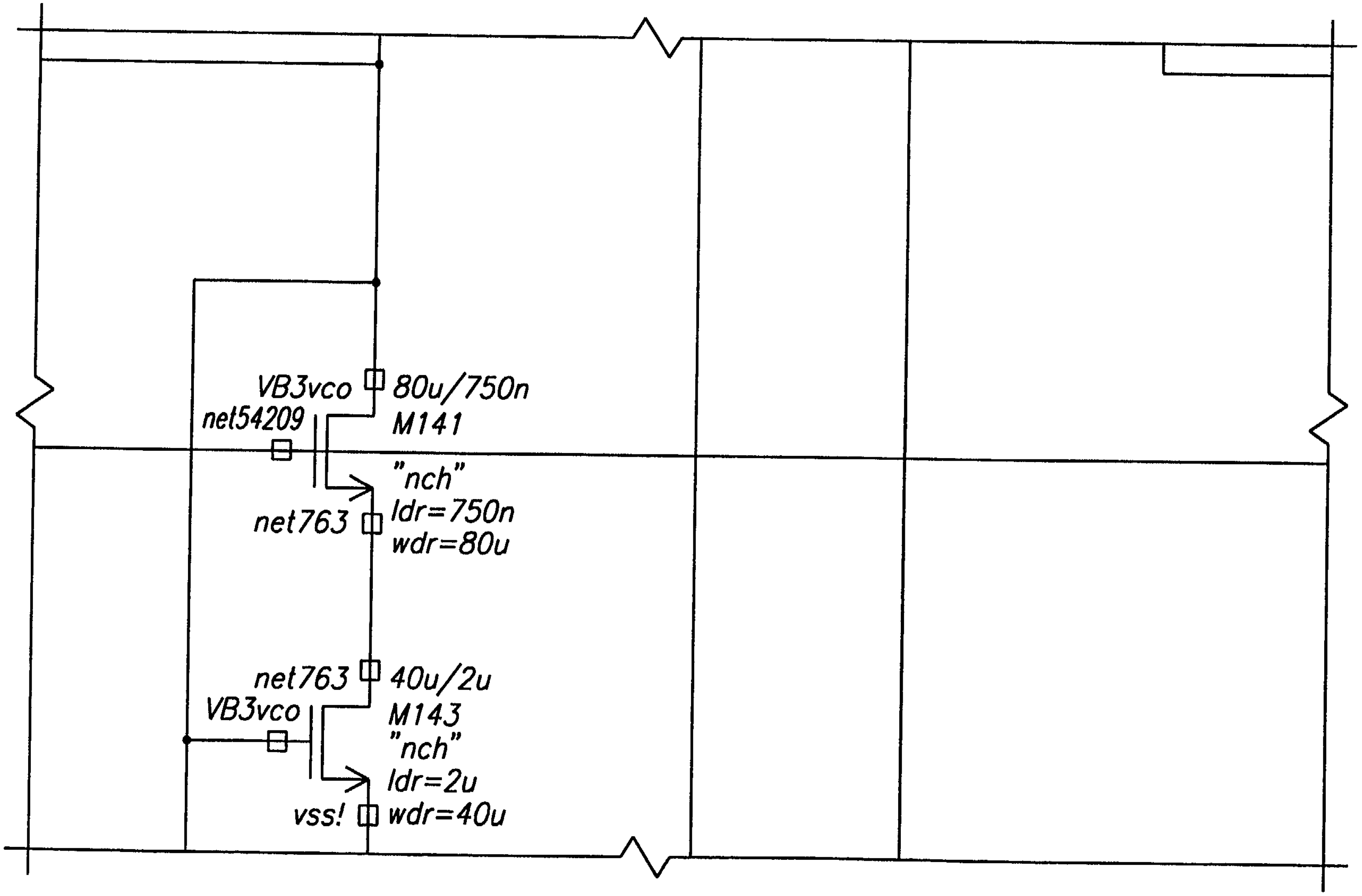

VB3vco
80u/750n
net54209
M141
"nch"
net763
ldr=750n
wdr=80u
net763
40u/2u
VB3vco
M143
"nch"
ldr=2u
vss!
wdr=40u

Fig 8.0601ED

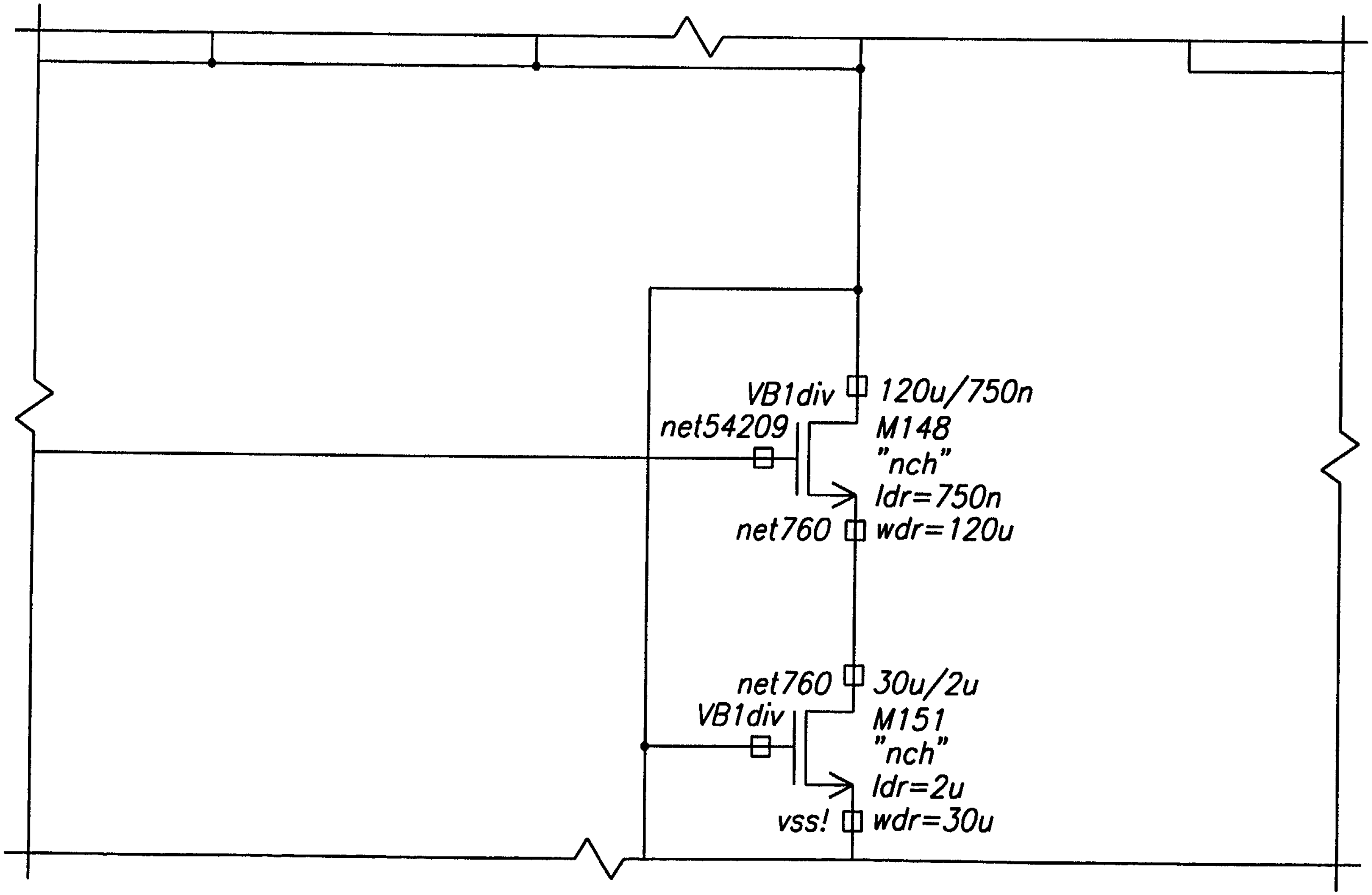

VB1div
120u/750n
net54209
M148
"nch"
ldr=750n
net760
wdr=120u
net760
30u/2u
VB1div
M151
"nch"
ldr=2u
vss!
wdr=30u

Fig 8.0607EE

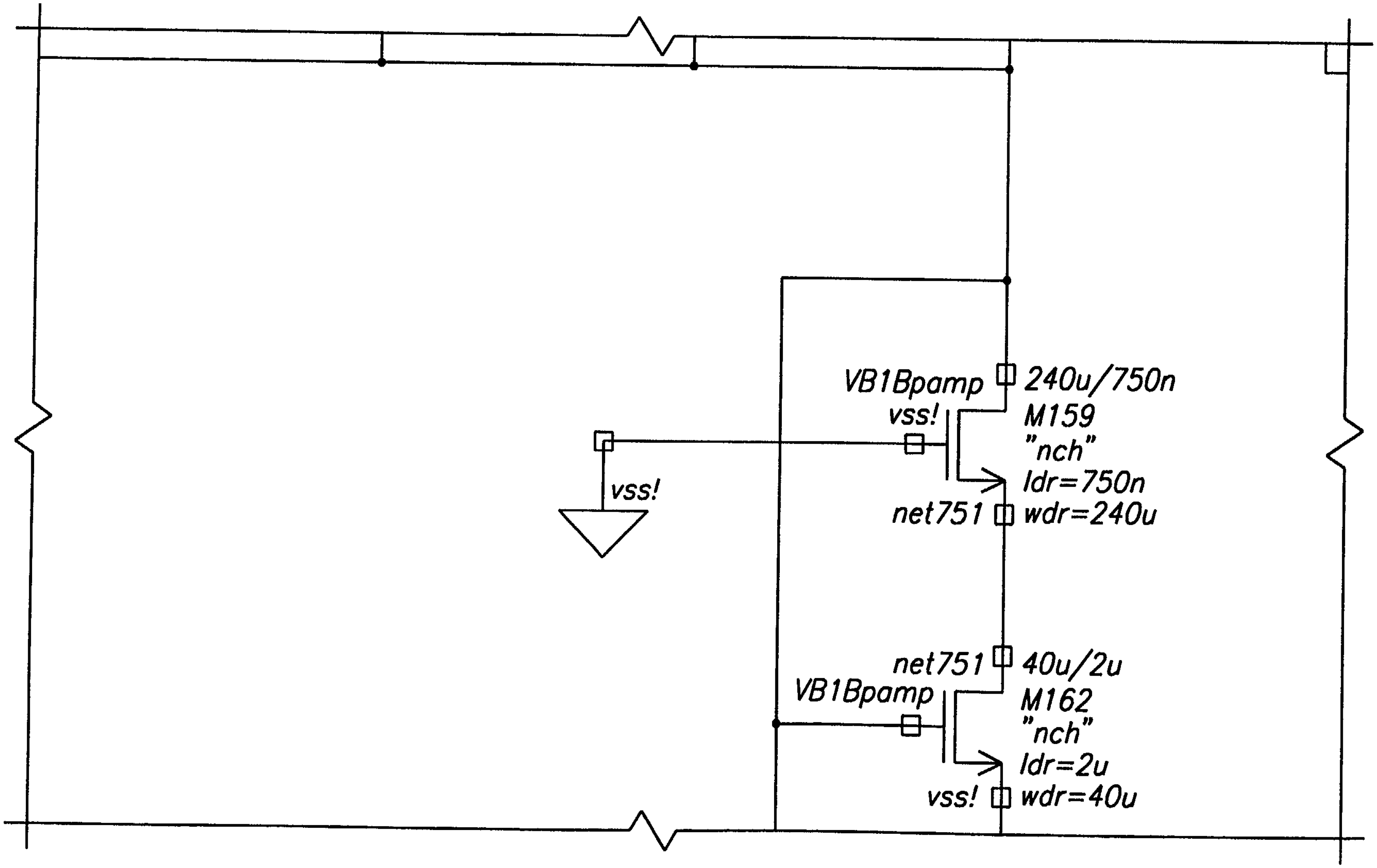

VB1Bpamp
vss!
240u/750n
M159
"nch"
ldr=750n
wdr=240u
net751
vss!
net751
VB1Bpamp
40u/2u
M162
"nch"
ldr=2u
vss!
wdr=40u

Fig 8.0601EF

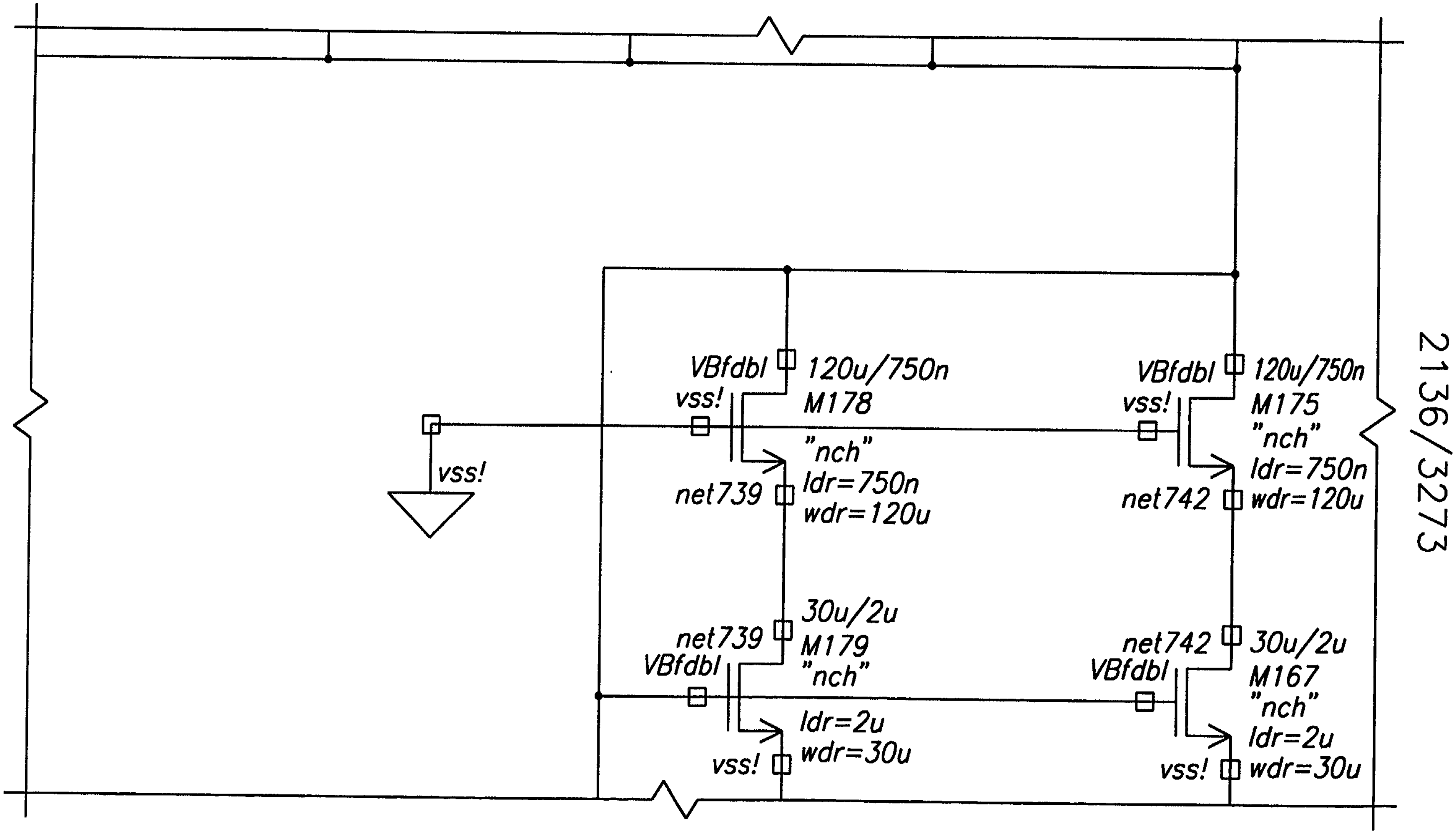

2136/3273
VBfdbl
120u/750n
M175
"nch"
ldr=750n
wdr=120u
vss!
net742
net742
30u/2u
M167
"nch"
ldr=2u
wdr=30u
VBfdbl
vss!
VBfdbl
120u/750n
M178
"nch"
ldr=750n
wdr=120u
vss!
net739
net739
30u/2u
M179
"nch"
ldr=2u
wdr=30u
VBfdbl
vss!
vss!

Fig 8.0607EG

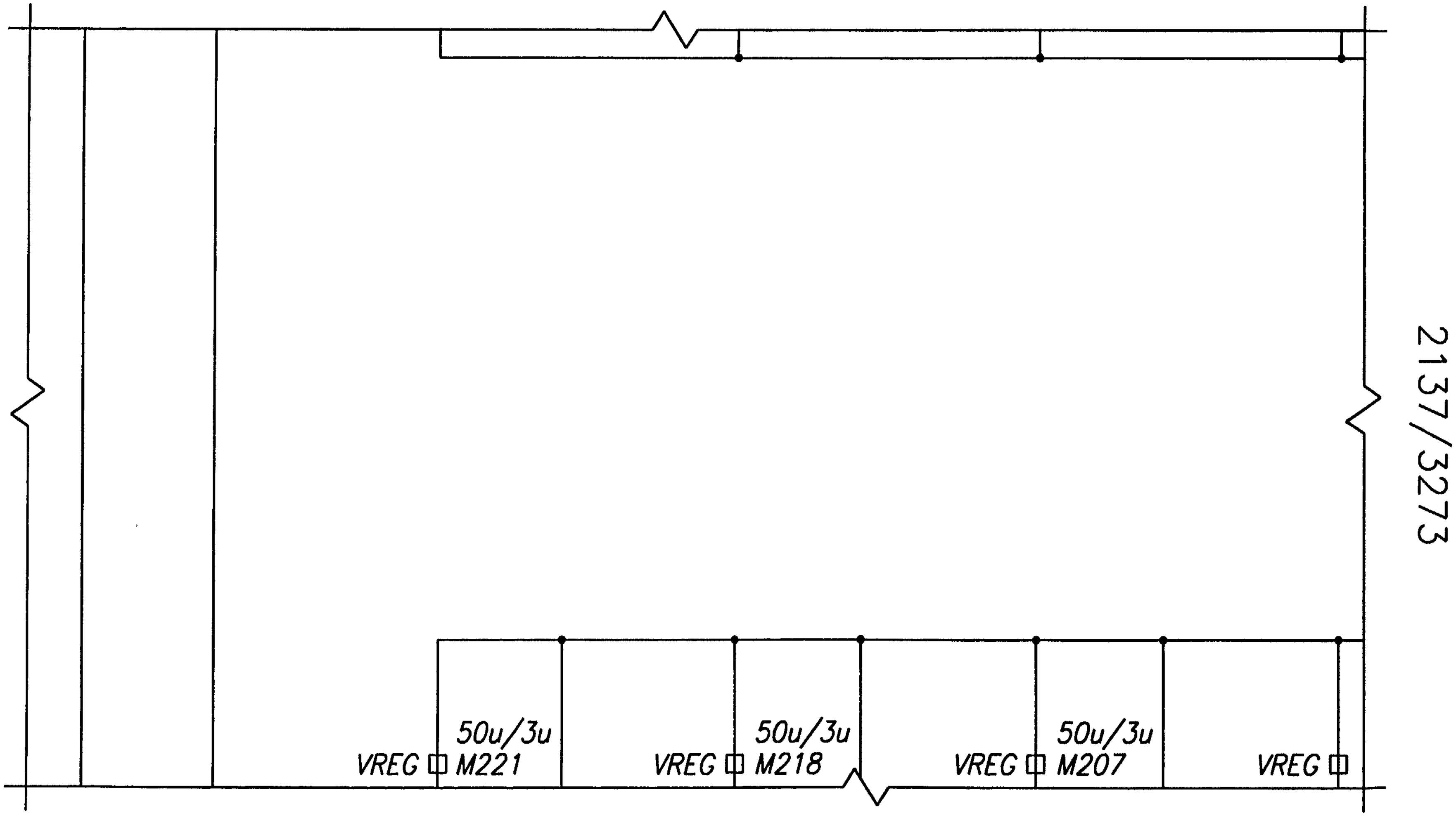

VREG
M221
50u/3u
VREG
M218
50u/3u
VREG
M207
50u/3u
VREG
2137/3273

Fig 8.0607EH

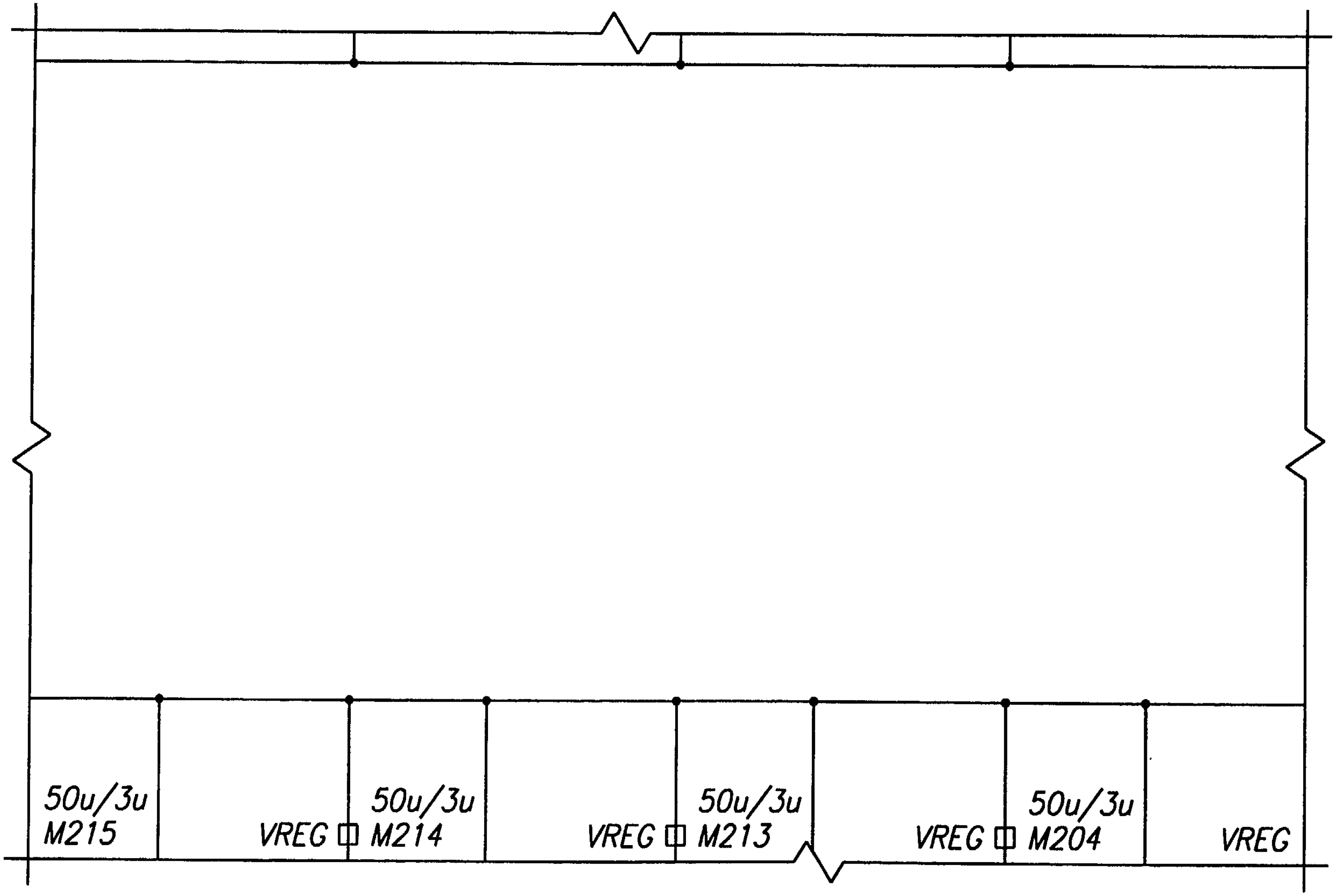

50u/3u
M215
VREG
50u/3u
M214
VREG
50u/3u
M213
VREG
50u/3u
M204
VREG

Fig 8.0601EI

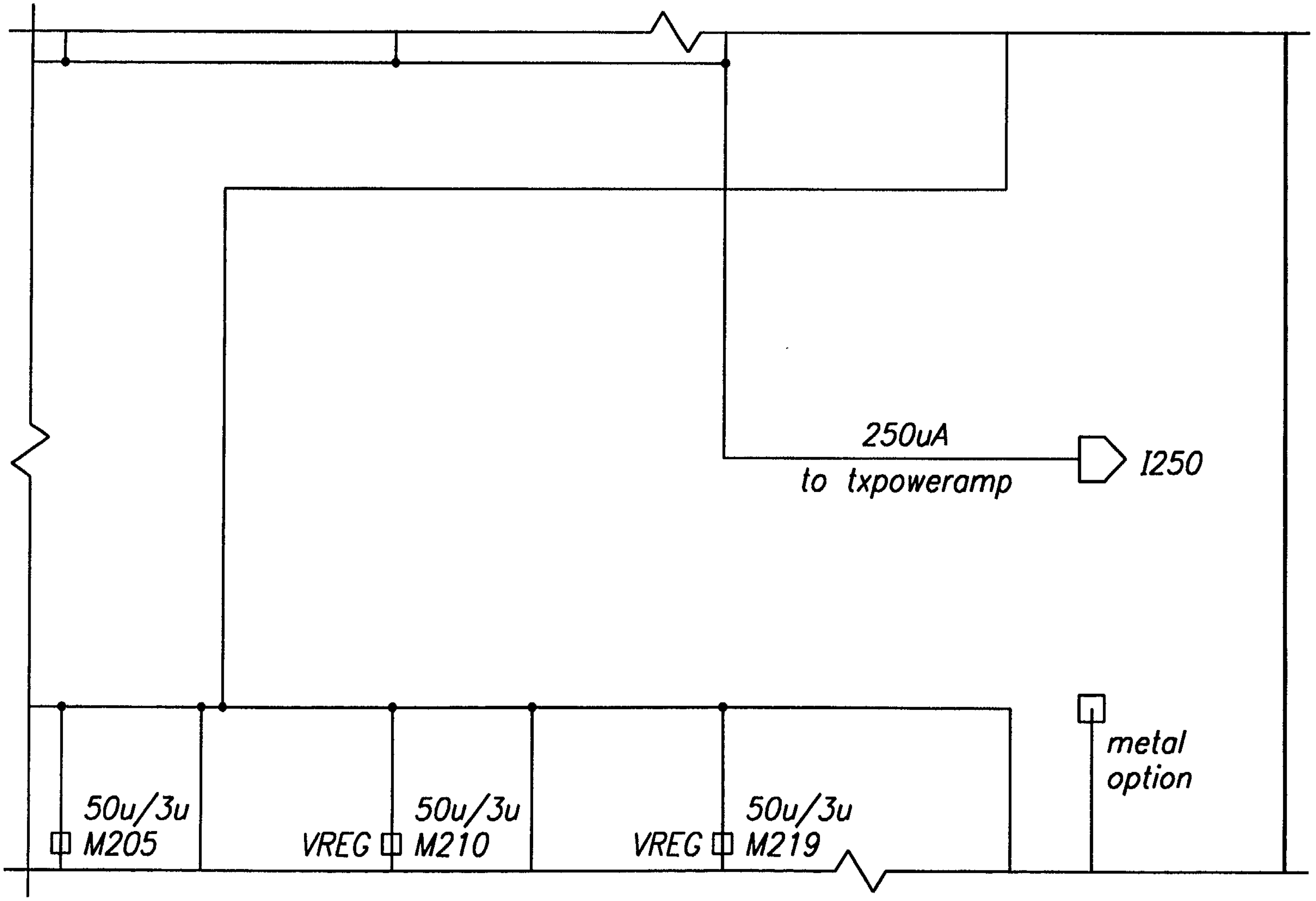

250uA
to txpoweramp
I250
metal
option
50u/3u
M205
VREG
50u/3u
M210
VREG
50u/3u
M219

Fig 8.0601Ed

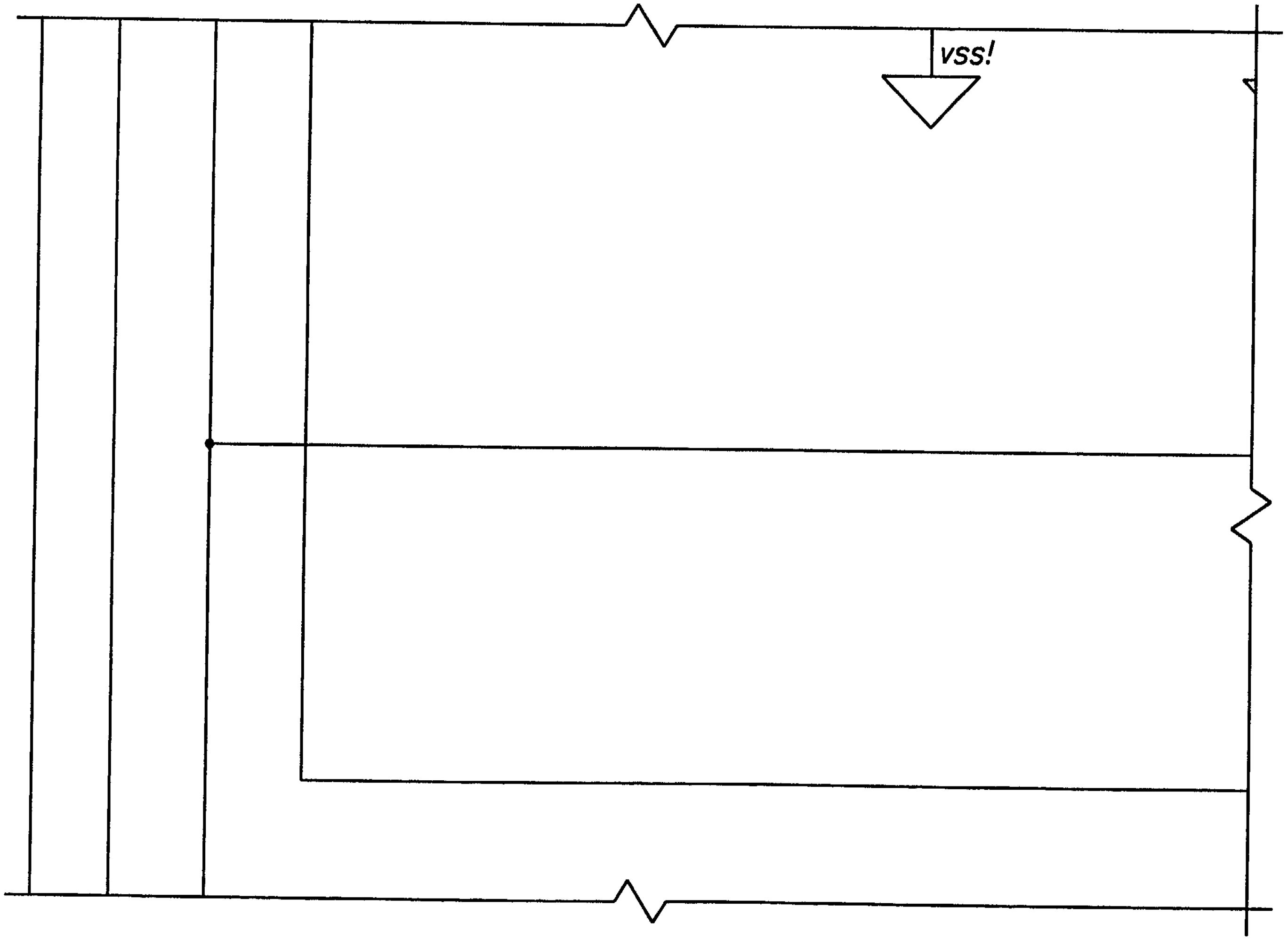


Fig 8.0601FA

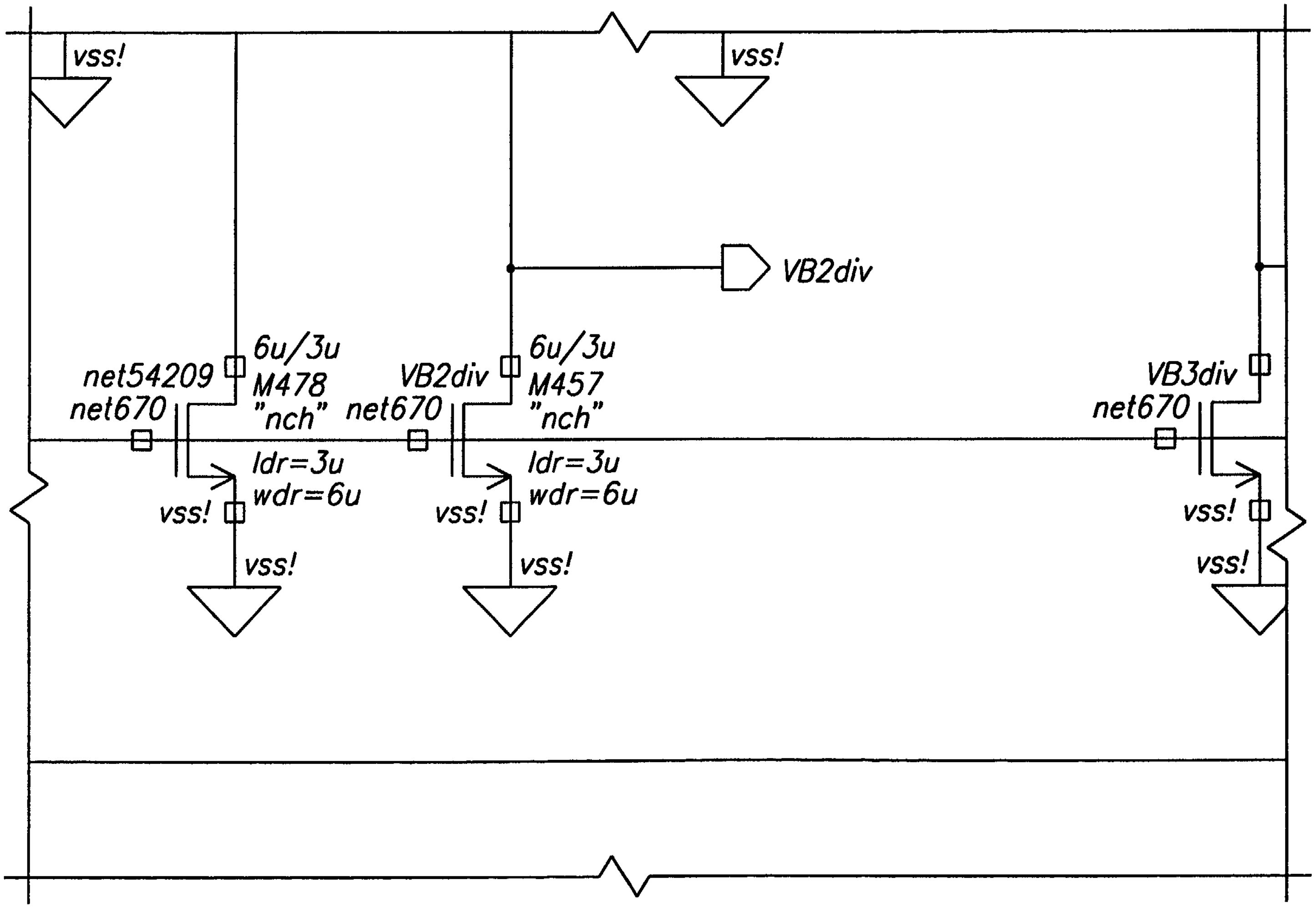

vss!
vss!
VB2div
net54209
net670
6u/3u
M478
"nch"
ldr=3u
wdr=6u
vss!
vss!
VB2div
net670
6u/3u
M457
"nch"
ldr=3u
wdr=6u
vss!
vss!
VB3div
net670
vss!
vss!

Fig 8.0601FB

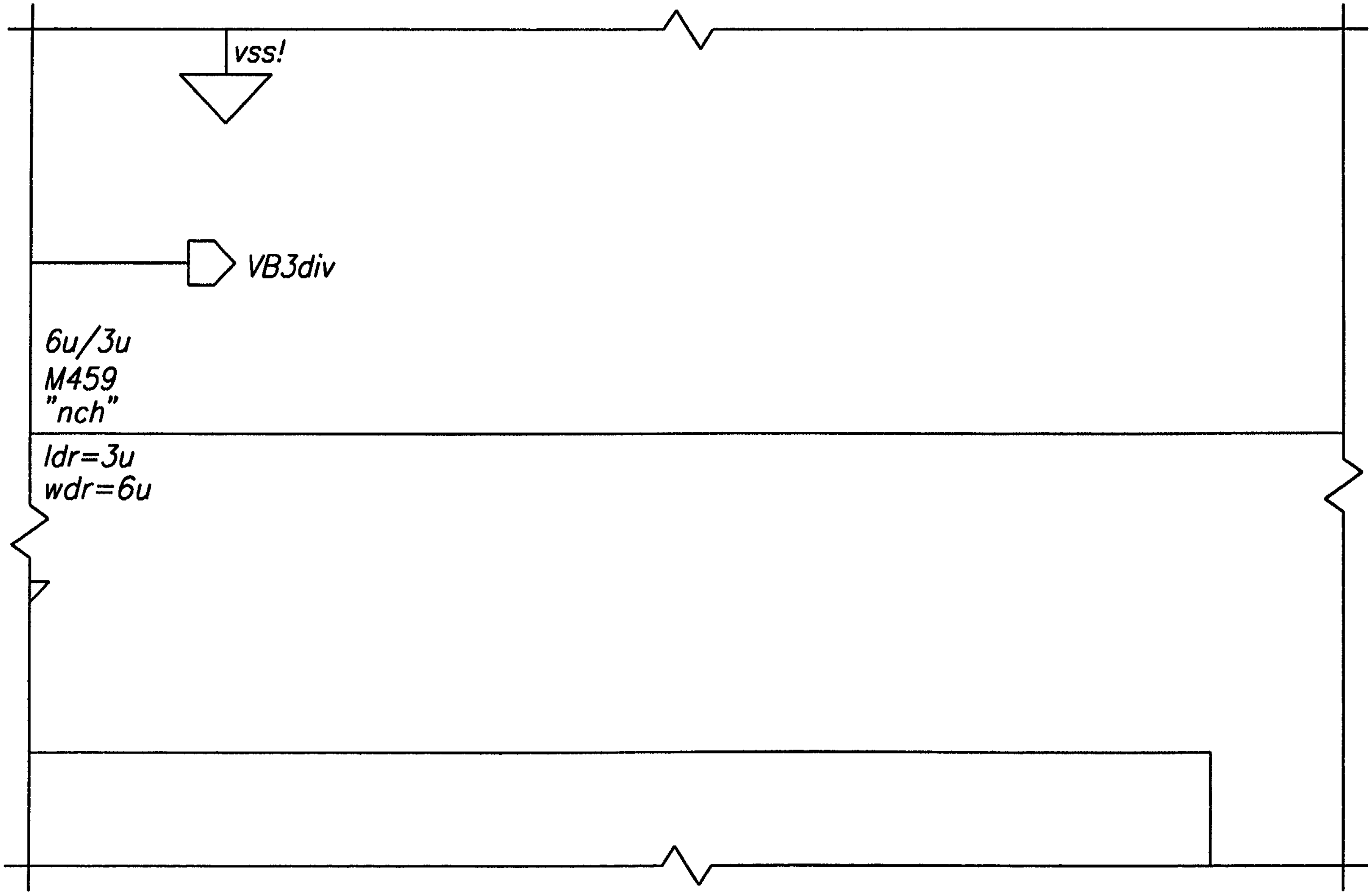


Fig 8.0601FC

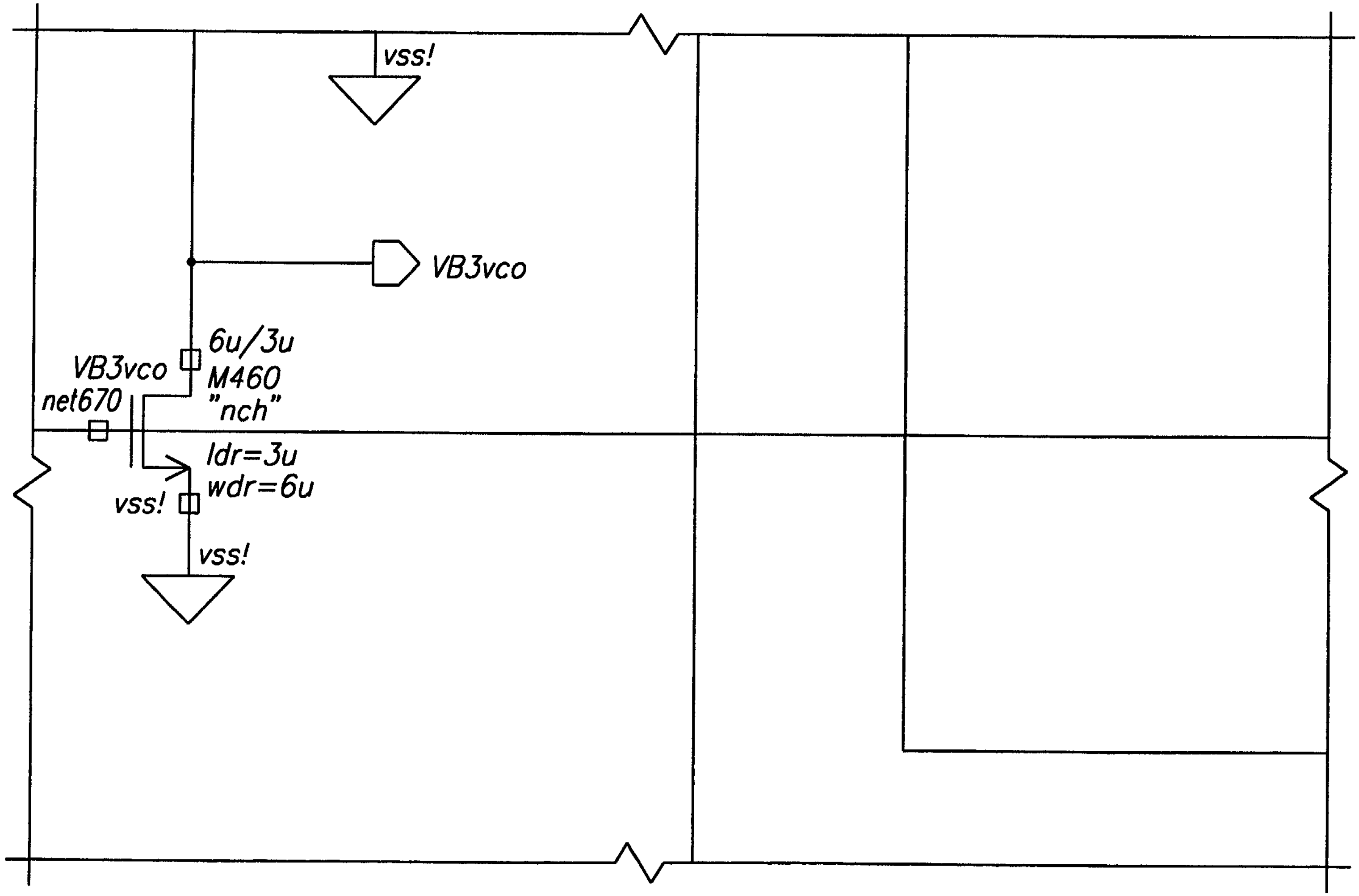


Fig 8.0601FD

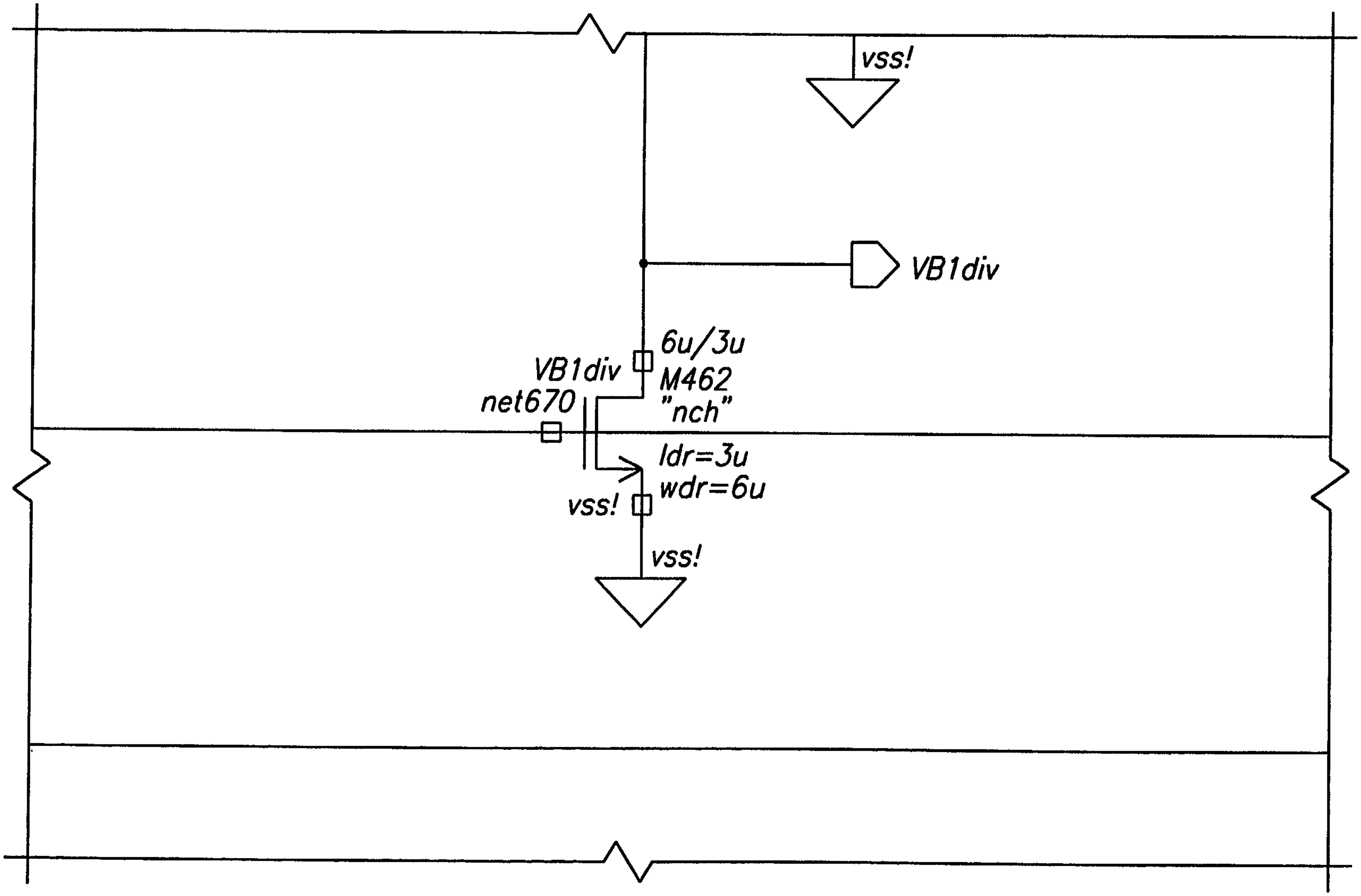


Fig 8.0601FE

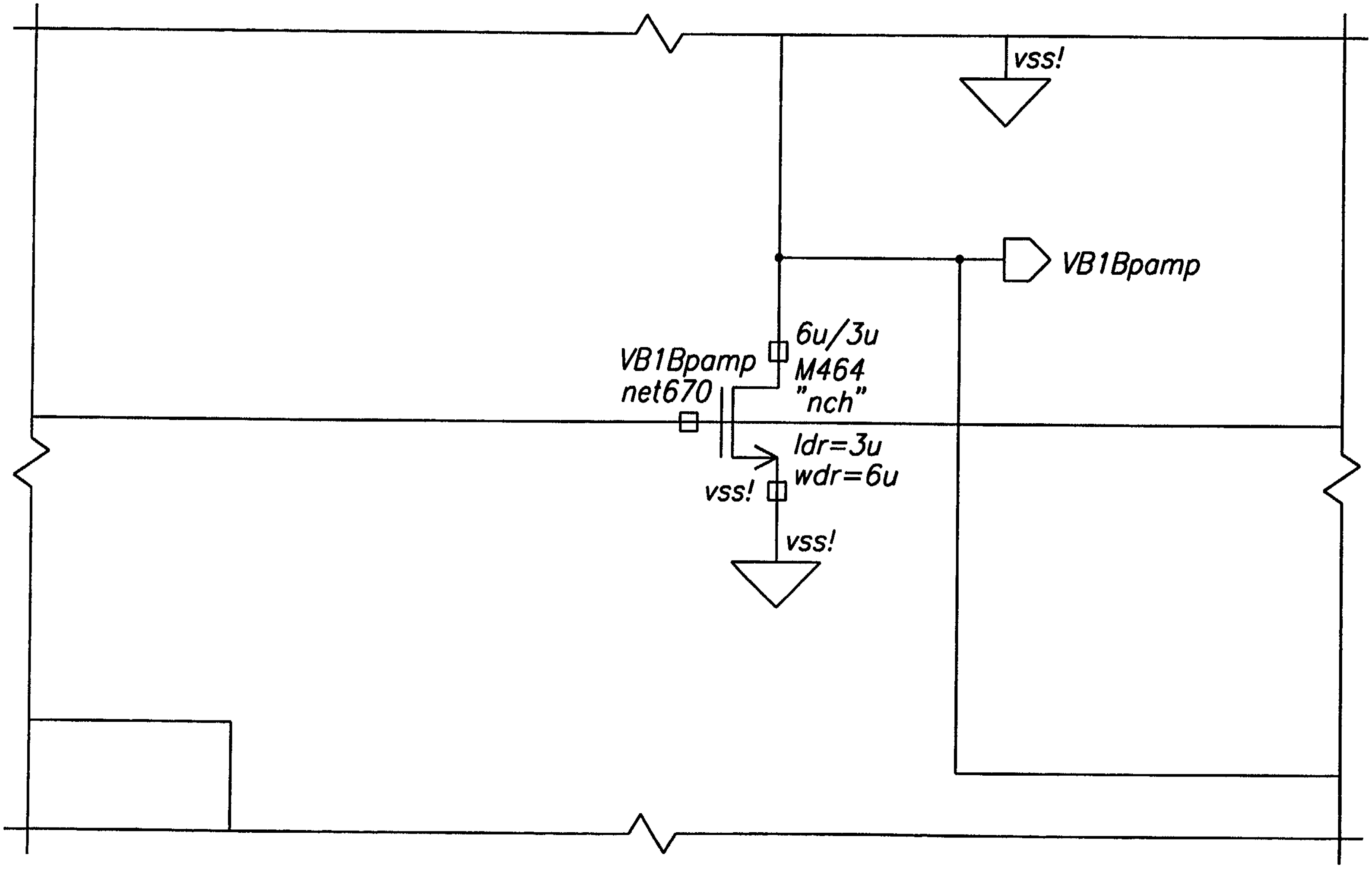

vss!
VB1Bpamp
6u/3u
M464
"nch"
VB1Bpamp
net670
ldr=3u
wdr=6u
vss!
vss!

Fig 8.0601FF

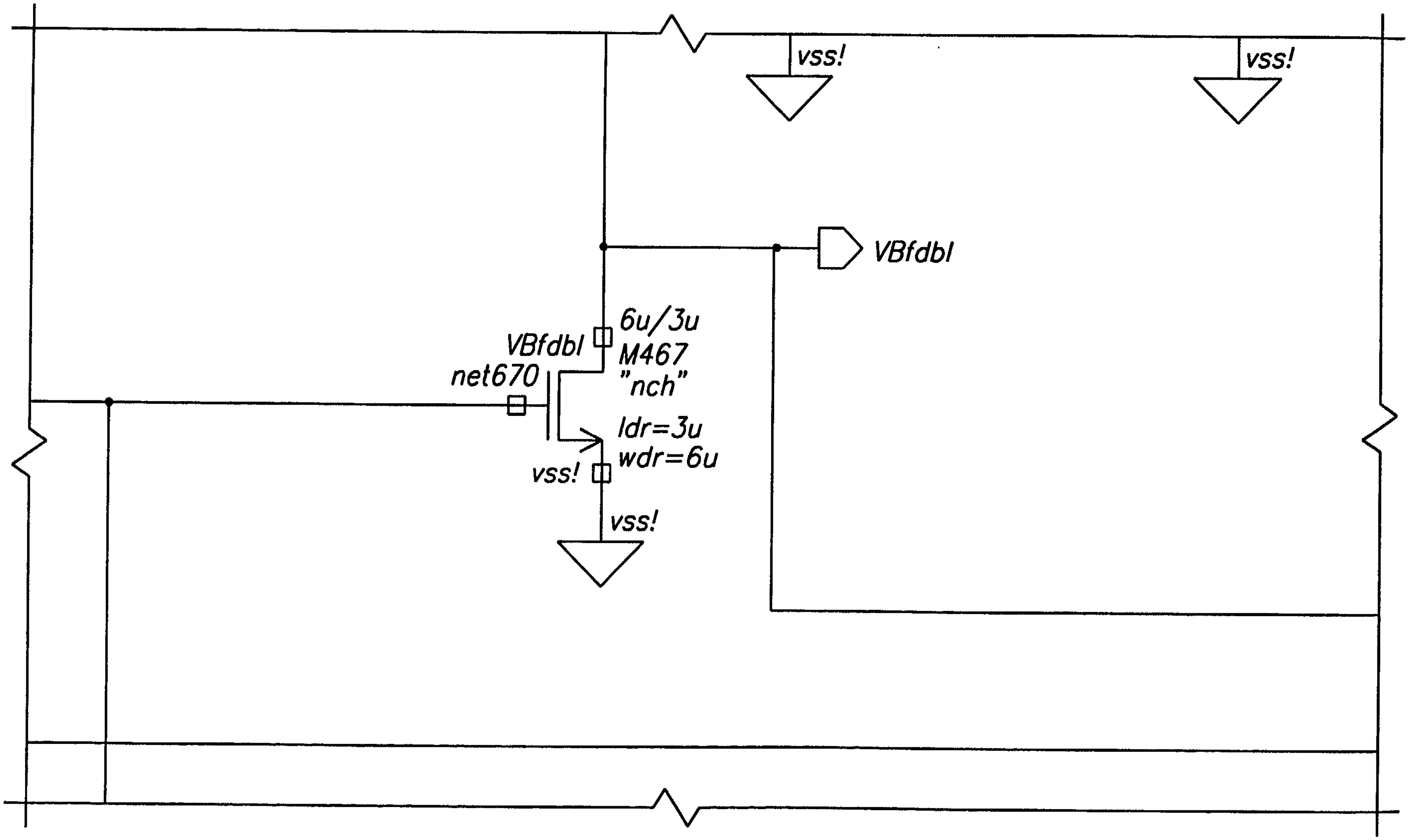


Fig 8.0601FG

2146/3273

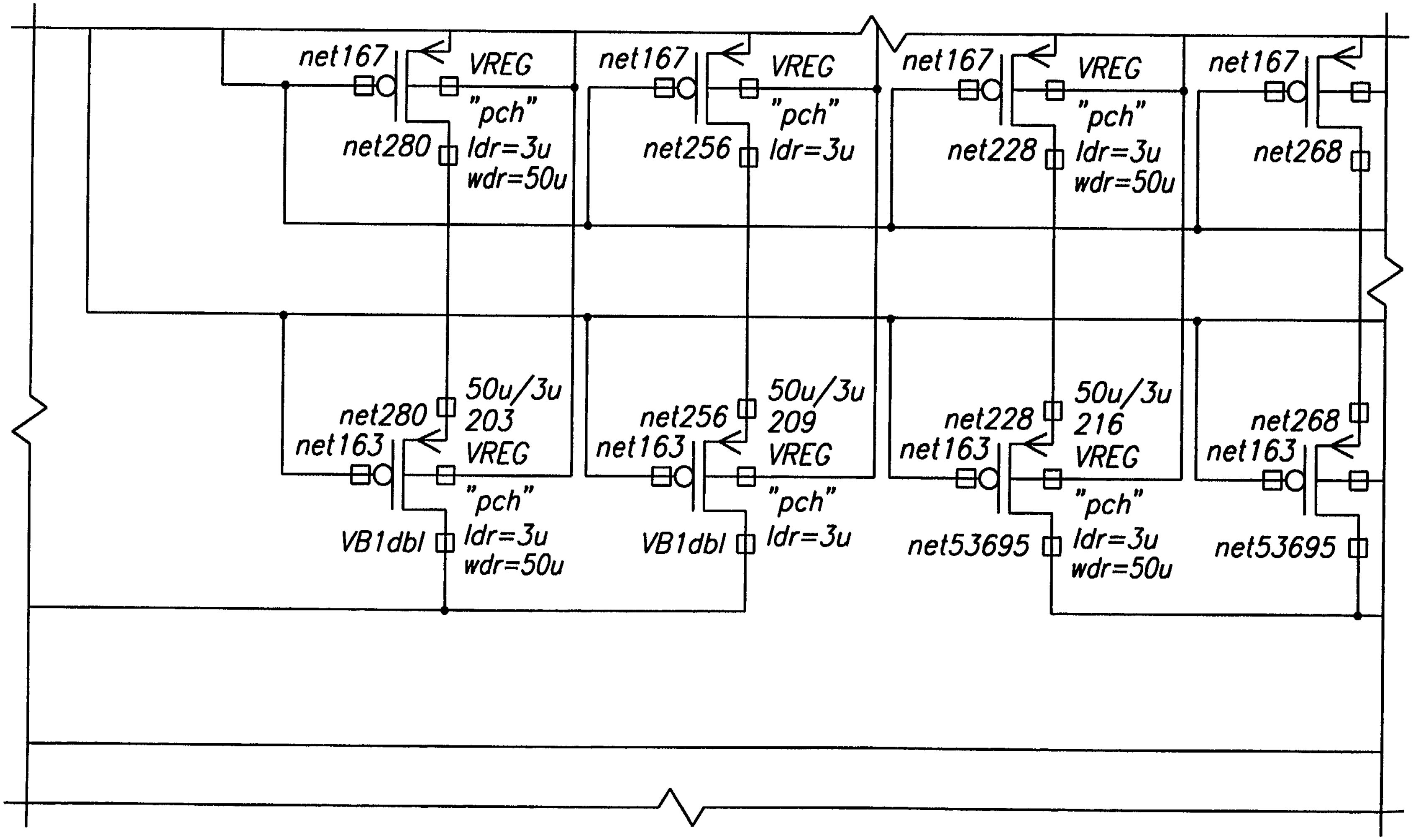

net167
VREG
"pch"
net280
ldr=3u
wdr=50u
net167
VREG
"pch"
net256
ldr=3u
net167
VREG
"pch"
net228
ldr=3u
wdr=50u
net167
net268
net280
50u/3u
203
net163
VREG
"pch"
VB1dbl
ldr=3u
wdr=50u
net256
50u/3u
209
net163
VREG
"pch"
VB1dbl
ldr=3u
net228
50u/3u
216
net163
VREG
"pch"
net53695
ldr=3u
wdr=50u
net268
net163
net53695

Fig 8.0601FH

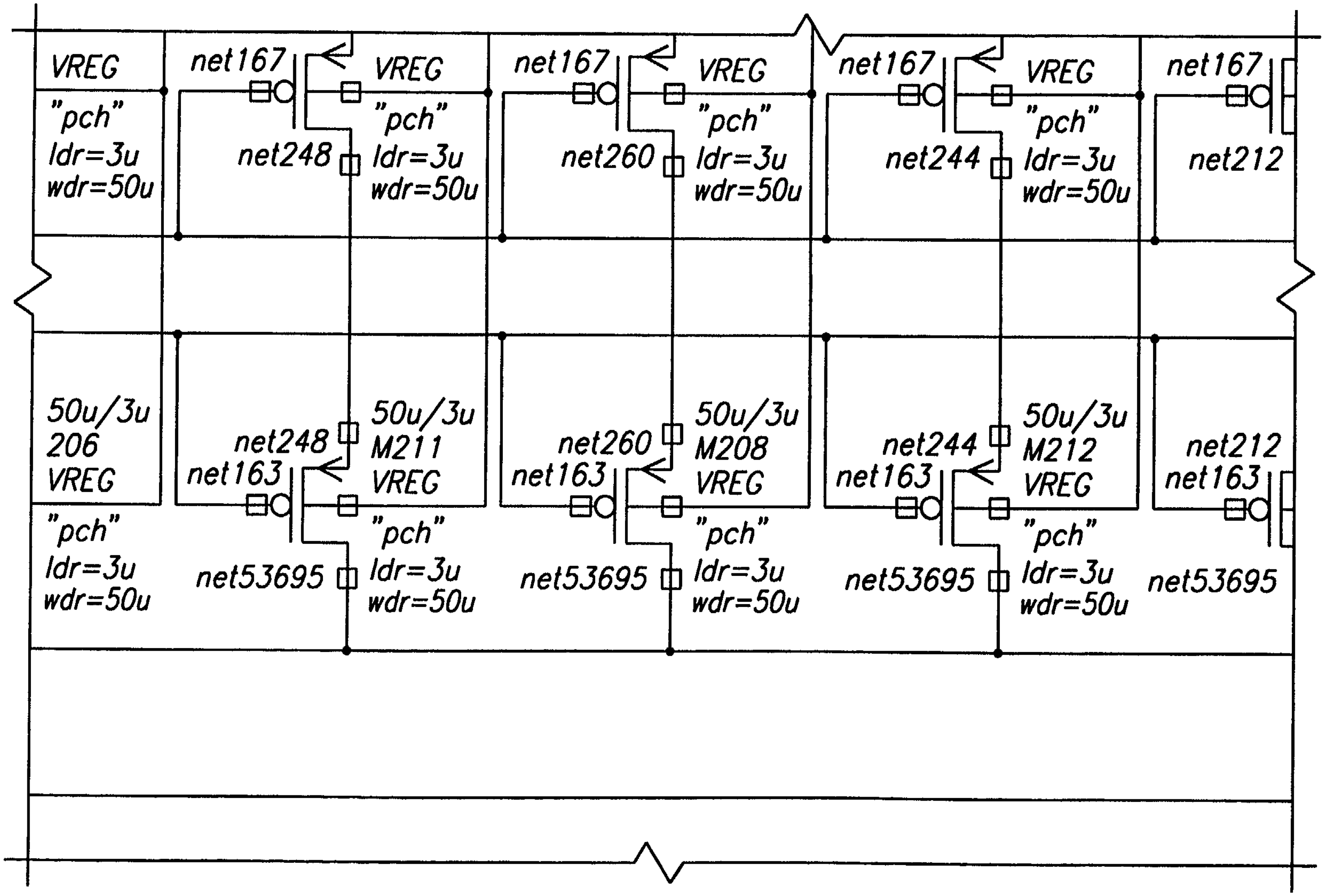

VREG
"pch"
ldr=3u
wdr=50u
net167
net248
VREG
"pch"
ldr=3u
wdr=50u
net167
net260
VREG
"pch"
ldr=3u
wdr=50u
net167
net244
VREG
"pch"
ldr=3u
wdr=50u
net167
net212
50u/3u
206
VREG
"pch"
ldr=3u
wdr=50u
net248
net163
net53695
50u/3u
M211
VREG
"pch"
ldr=3u
wdr=50u
net260
net163
net53695
50u/3u
M208
VREG
"pch"
ldr=3u
wdr=50u
net244
net163
net53695
50u/3u
M212
VREG
"pch"
ldr=3u
wdr=50u
net212
net163
net53695

Fig 8.0607FI

09822603.061101

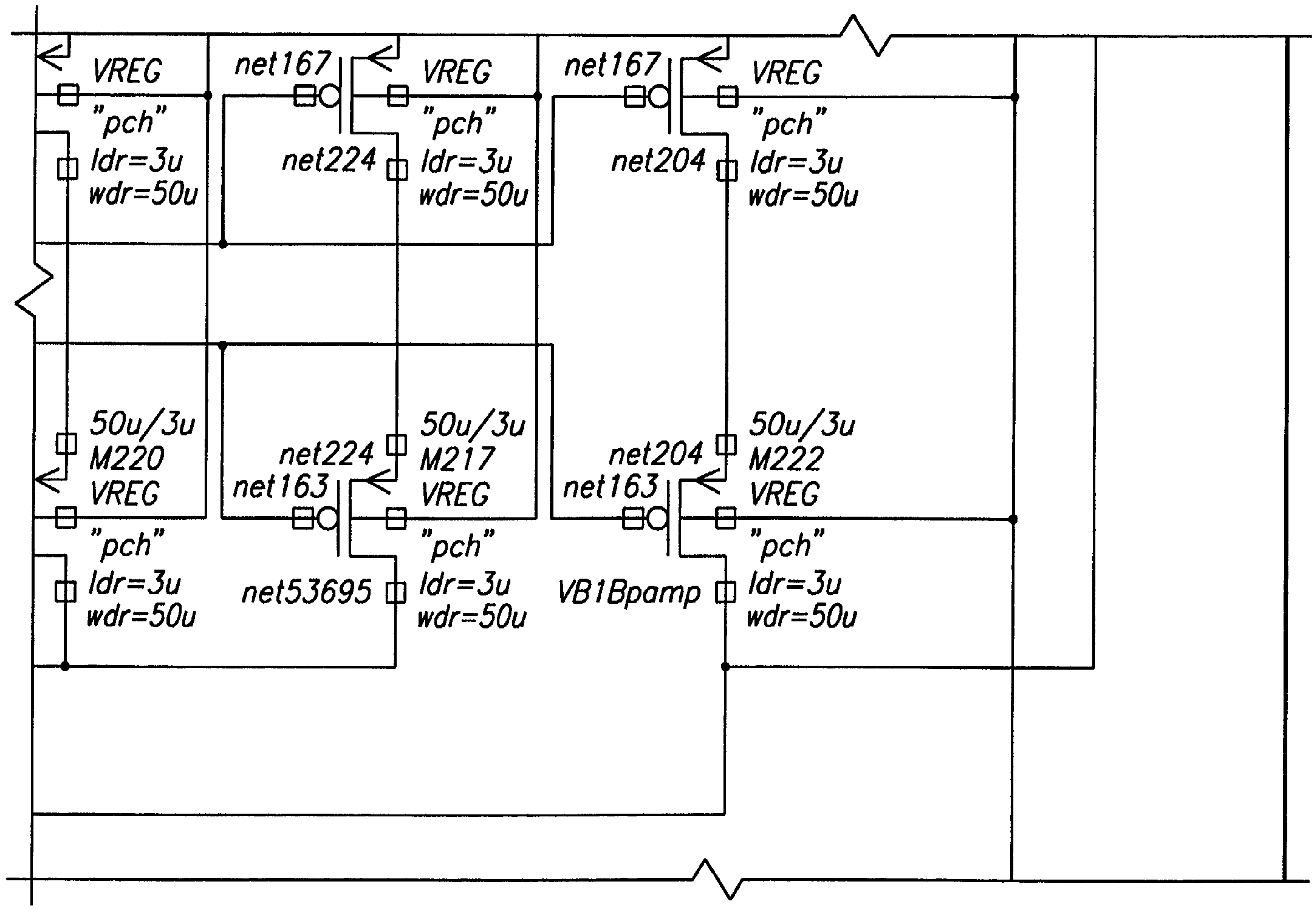


Fig 8.06071Fd

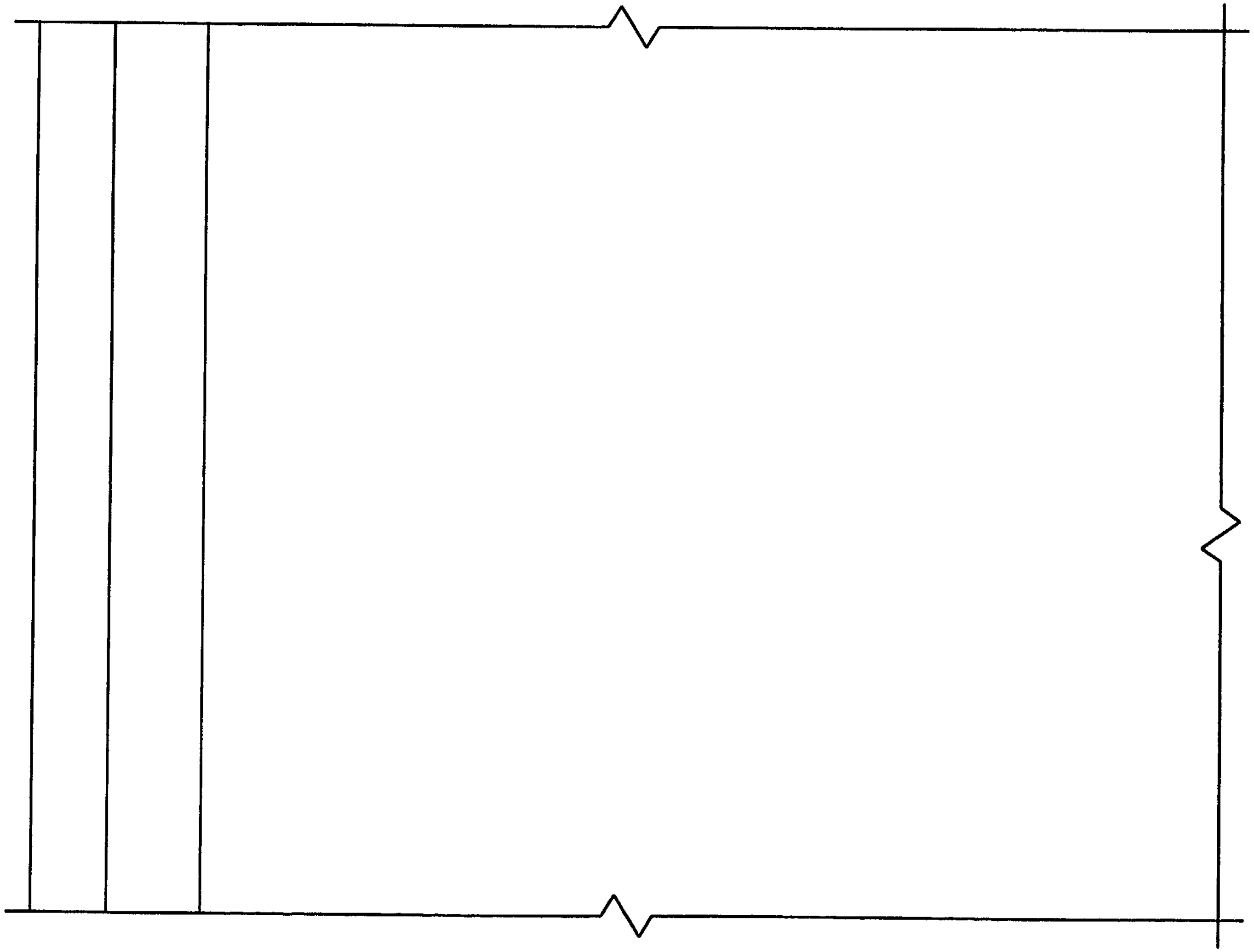


Fig 8.06016A

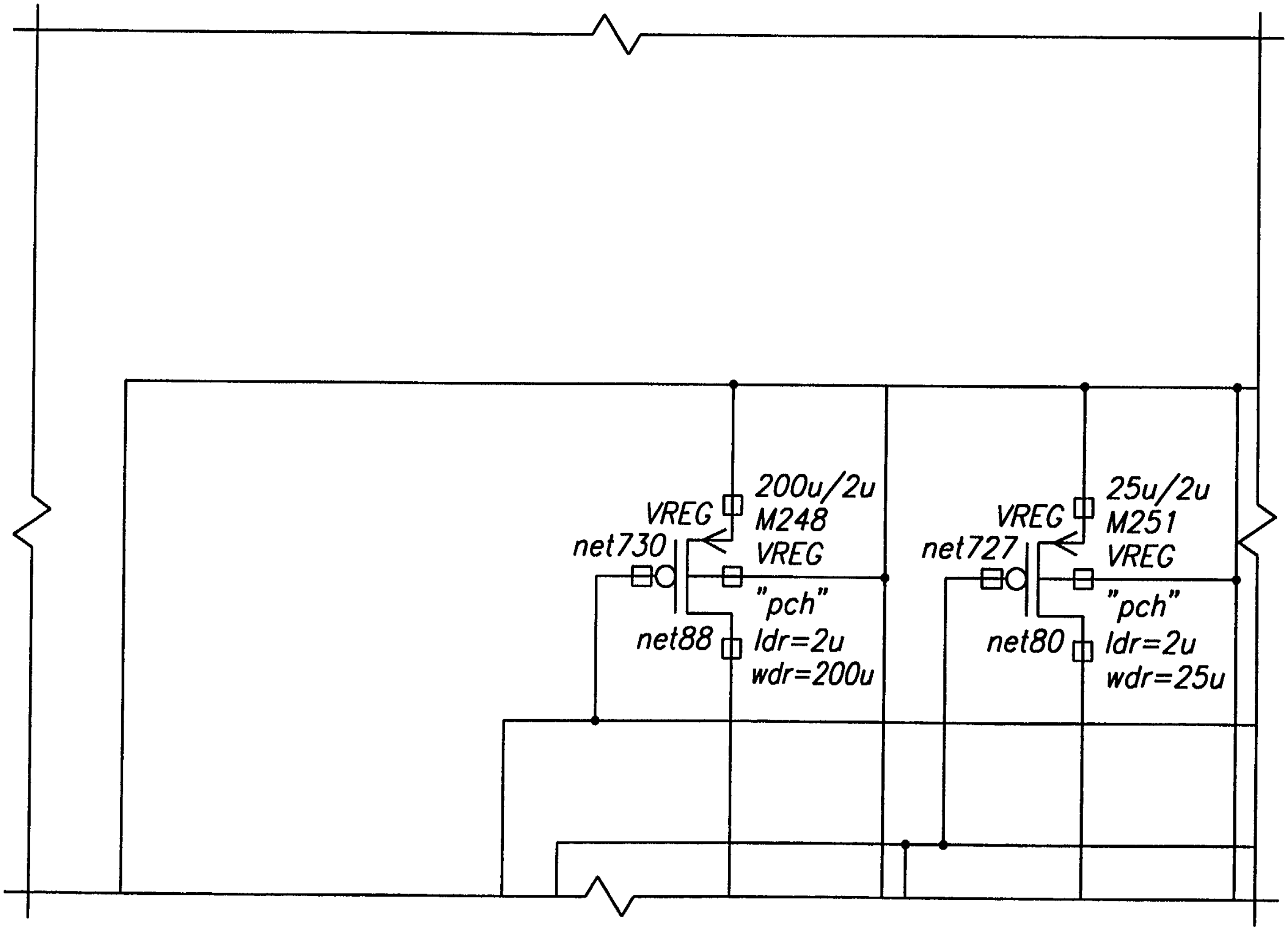

VREG
net730
200u/2u
M248
VREG
"pch"
net88
ldr=2u
wdr=200u
VREG
net727
25u/2u
M251
VREG
"pch"
net80
ldr=2u
wdr=25u

Fig 8.0601GB

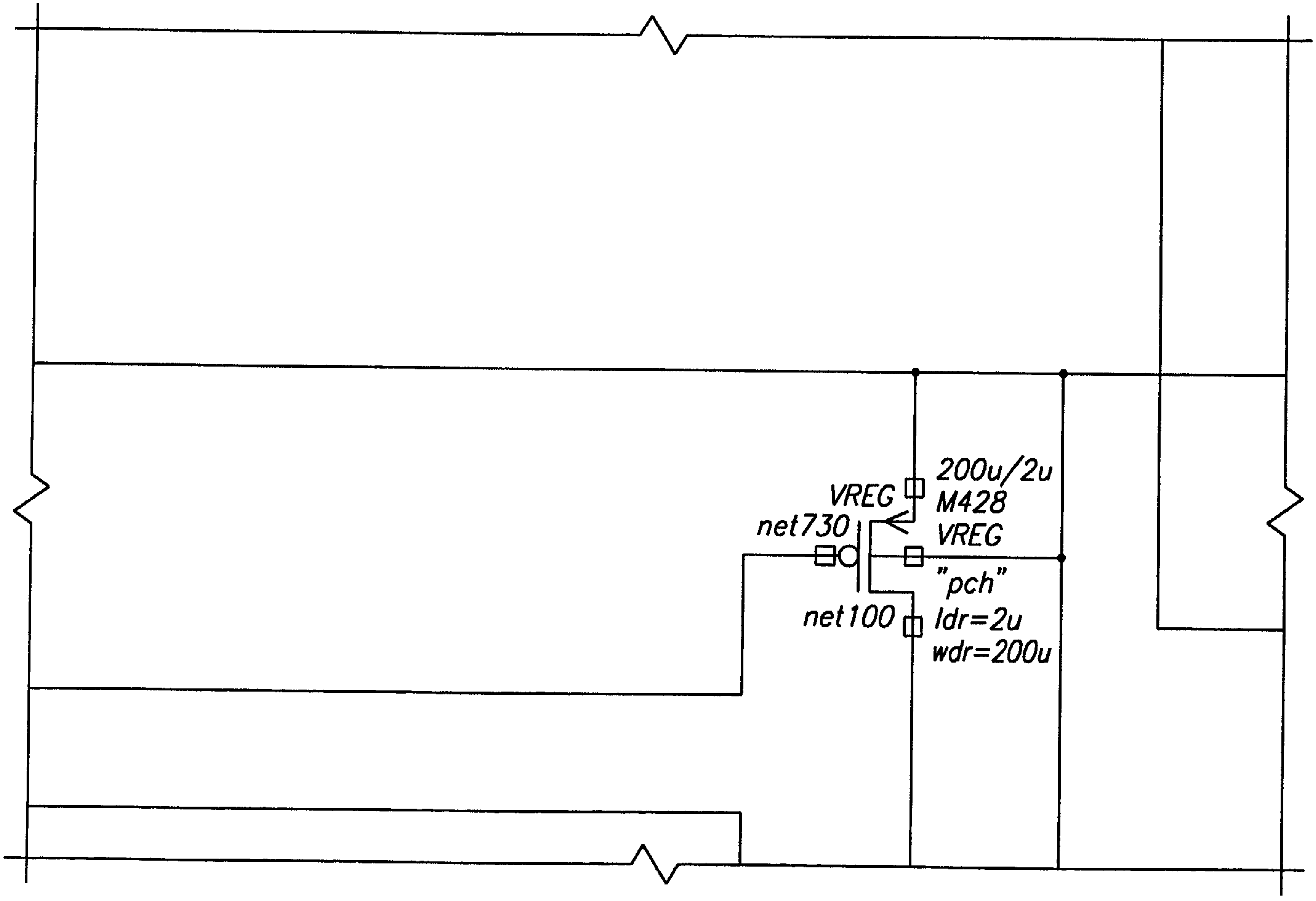


Fig 8.0607GC

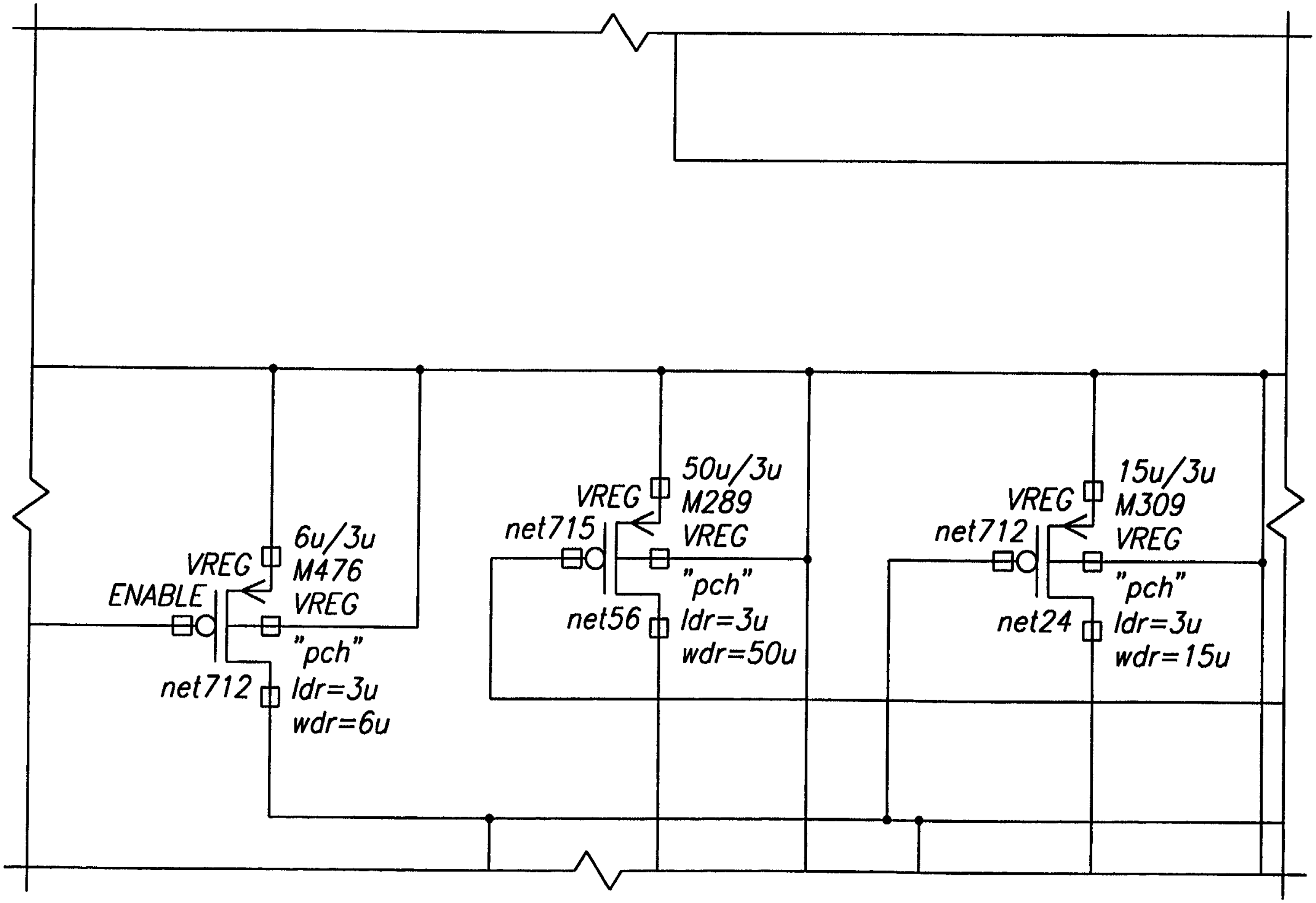

VREG
6u/3u
M476
VREG
"pch"
ldr=3u
wdr=6u
ENABLE
net712
VREG
50u/3u
M289
VREG
"pch"
ldr=3u
wdr=50u
net715
net56
VREG
15u/3u
M309
VREG
"pch"
ldr=3u
wdr=15u
net712
net24

Fig 8.06076D

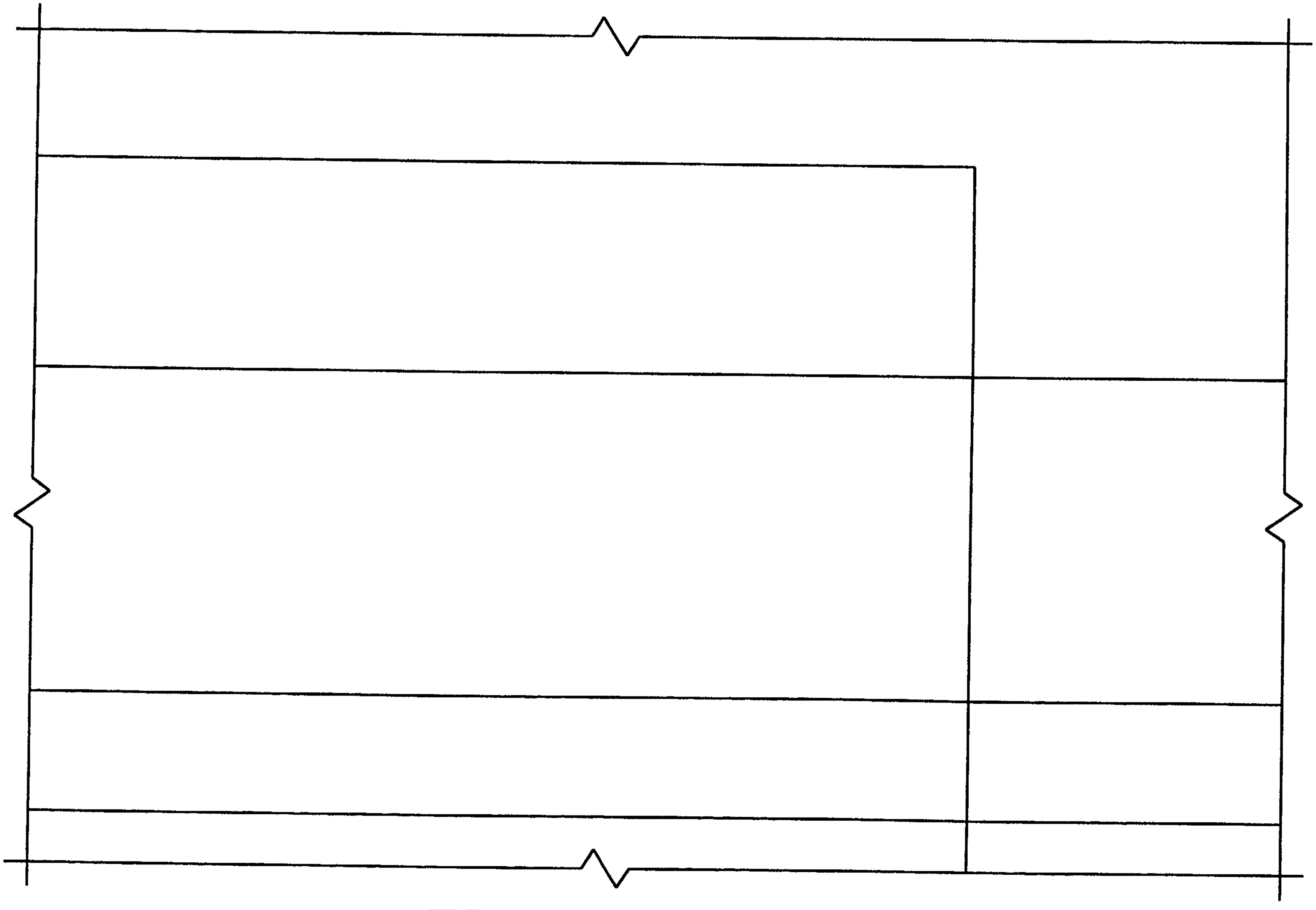


Fig 8.0607GE

09822063.061101

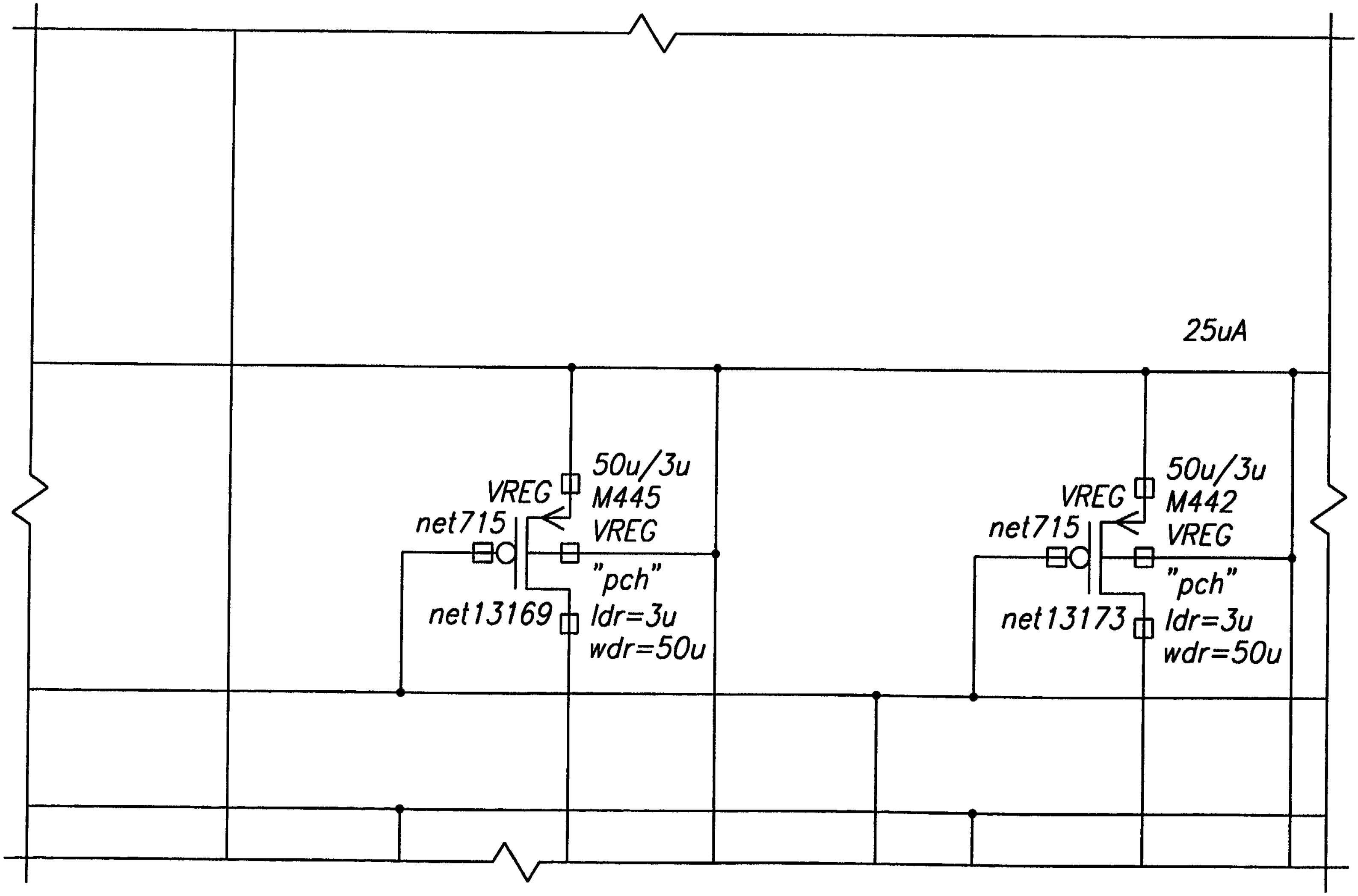


Fig 8.0601GF

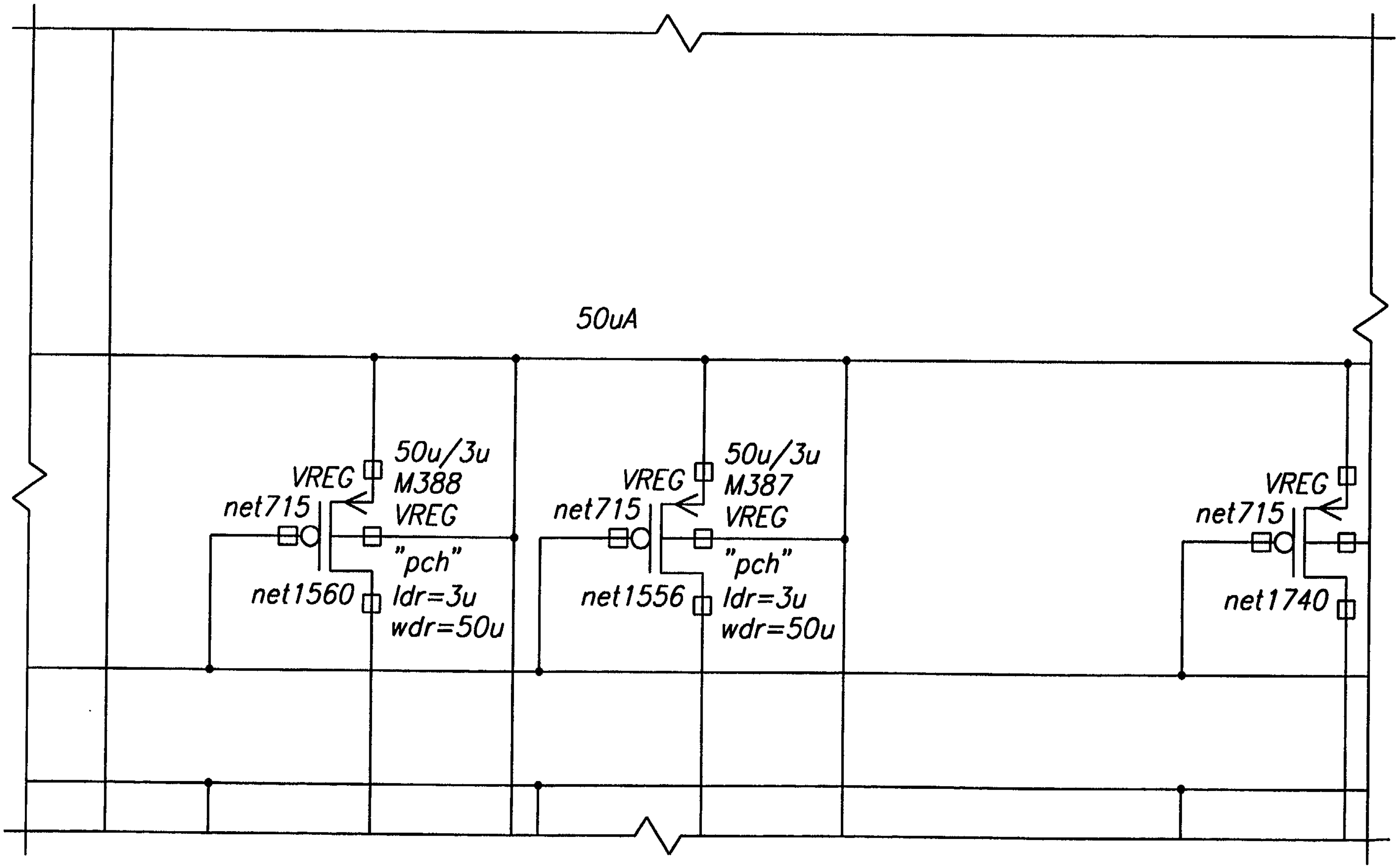

50uA
VREG
net715
net1560
50u/3u
M388
VREG
"pch"
ldr=3u
wdr=50u
VREG
net715
net1556
50u/3u
M387
VREG
"pch"
ldr=3u
wdr=50u
VREG
net715
net1740

Fig 8.060166

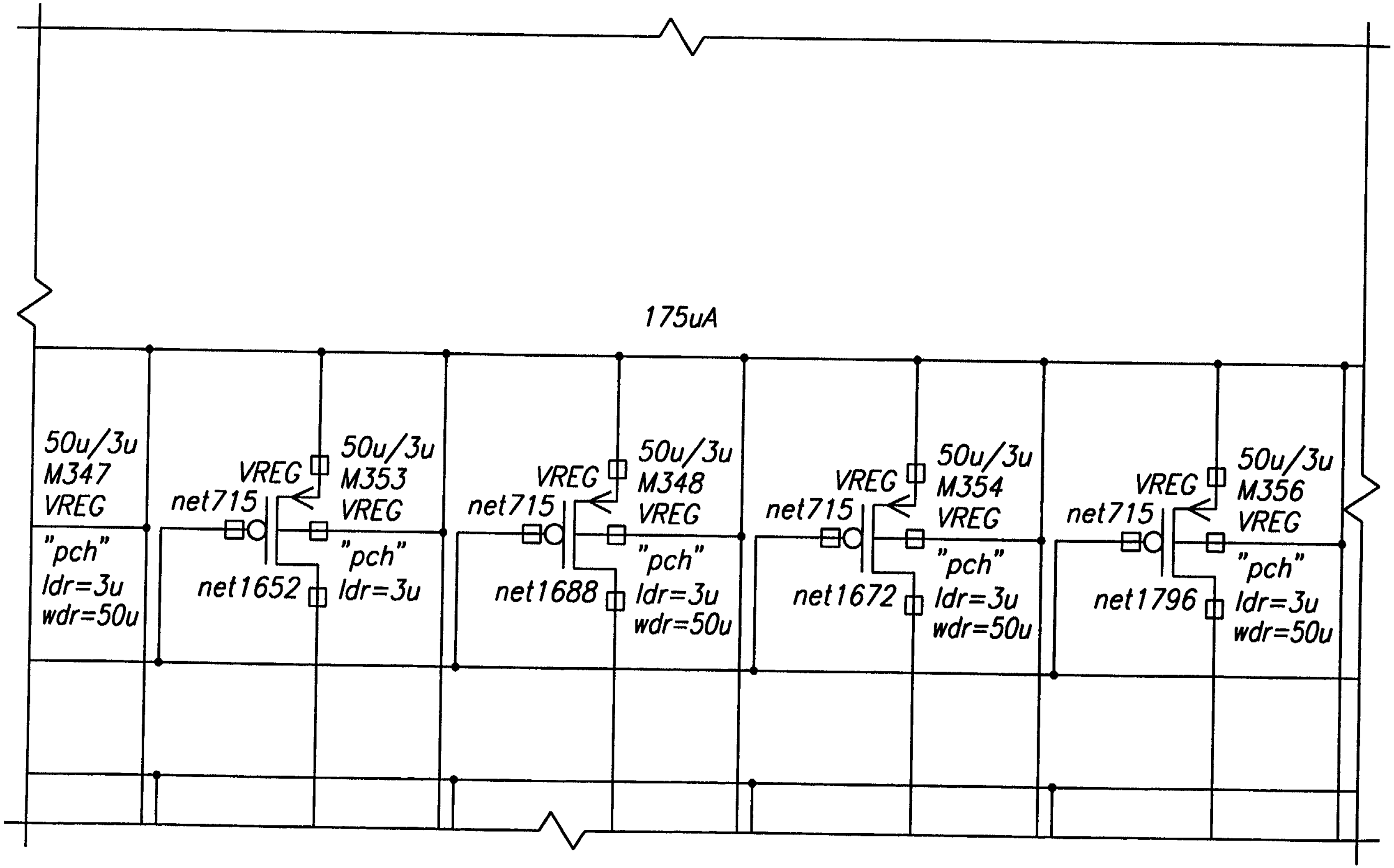

175uA
50u/3u
M347
VREG
"pch"
ldr=3u
wdr=50u
VREG
net715
net1652
50u/3u
M353
VREG
"pch"
ldr=3u
VREG
net715
net1688
50u/3u
M348
VREG
"pch"
ldr=3u
wdr=50u
VREG
net715
net1672
50u/3u
M354
VREG
"pch"
ldr=3u
wdr=50u
VREG
net715
net1796
50u/3u
M356
VREG
"pch"
ldr=3u
wdr=50u

Fig 8.0601GH

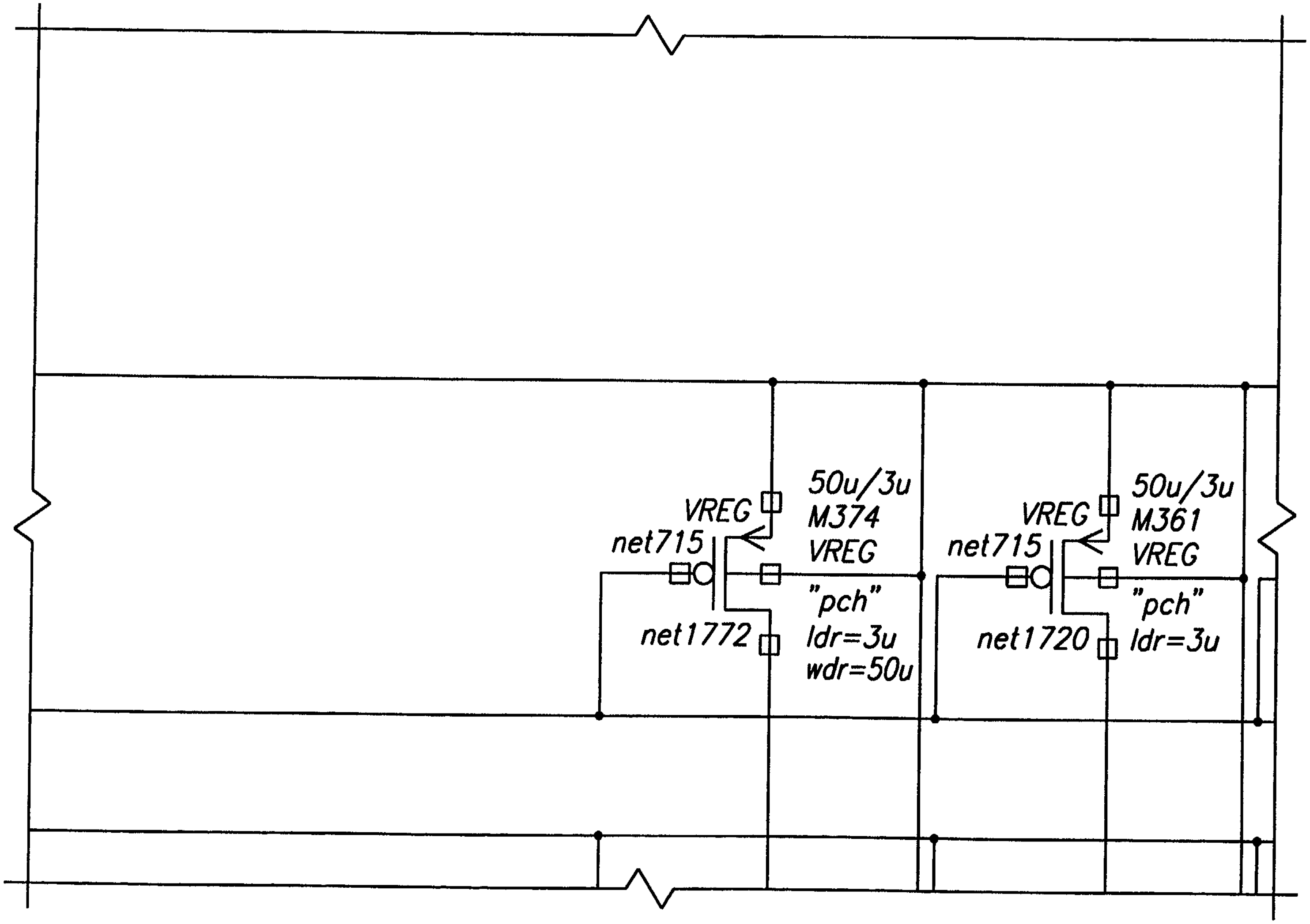

VREG
net715
net1772
50u/3u
M374
VREG
"pch"
ldr=3u
wdr=50u
VREG
net715
net1720
50u/3u
M361
VREG
"pch"
ldr=3u

Fig 8.0607GI

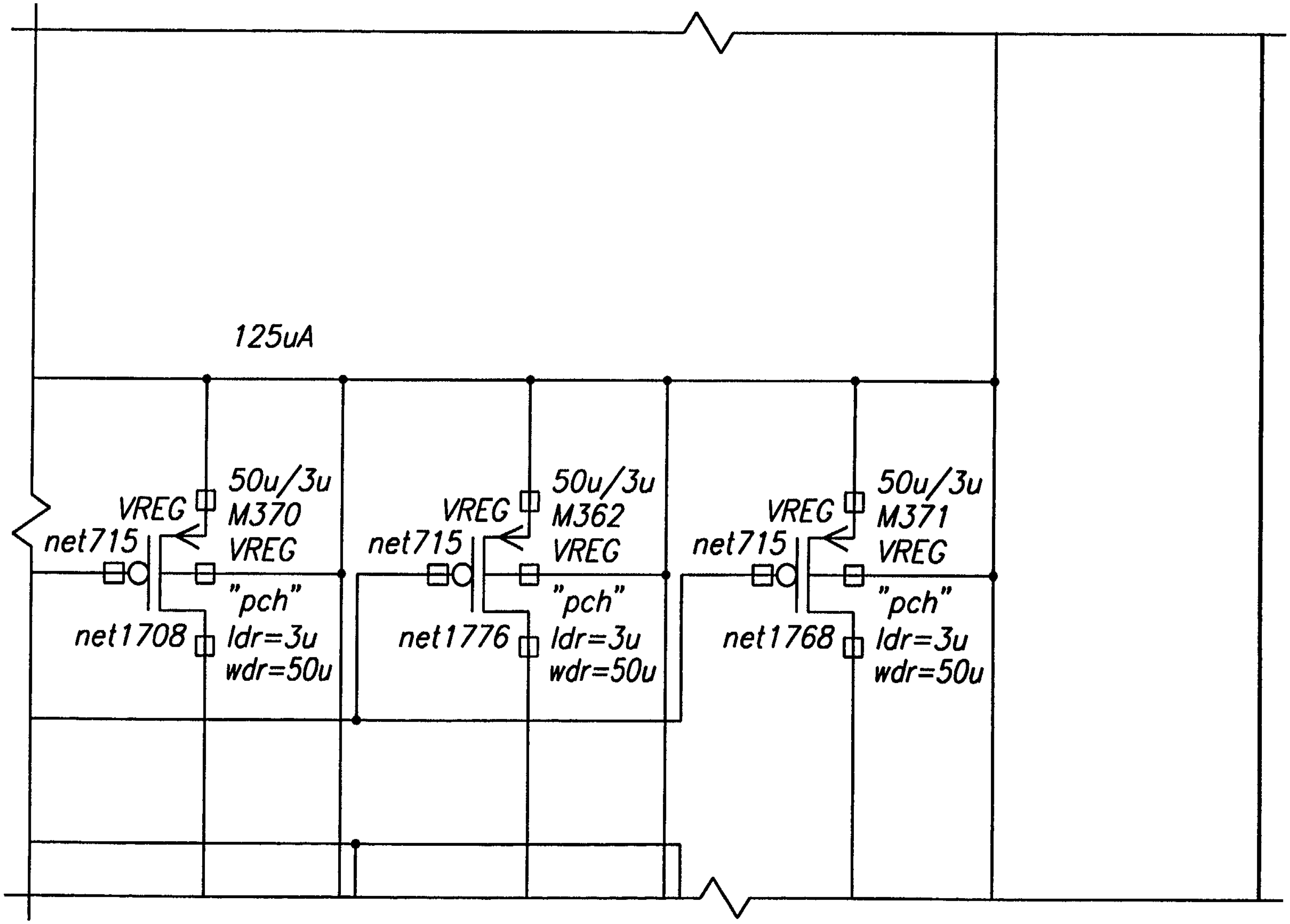


Fig 8.0601Ga1

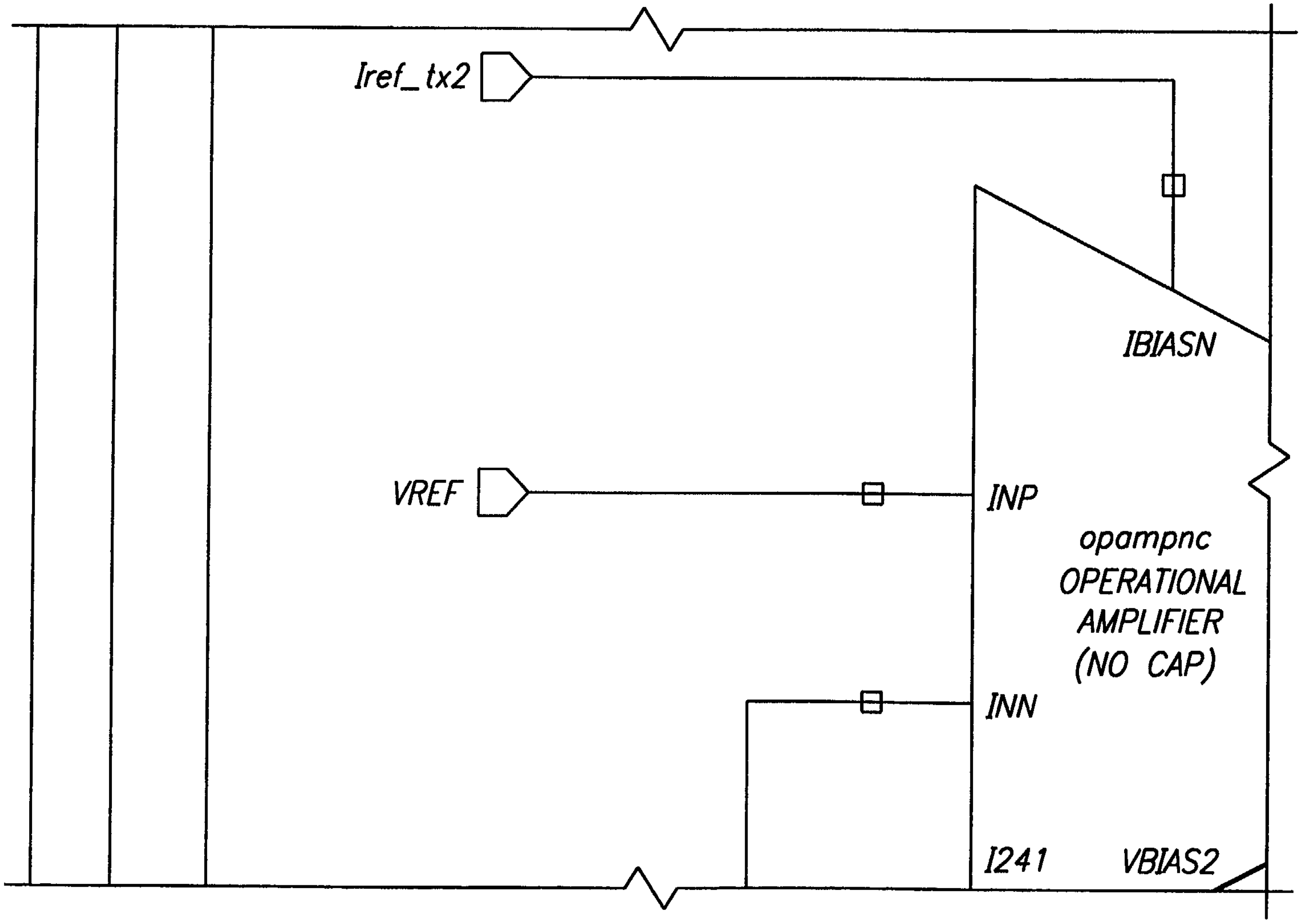

Iref_tx2
VREF
IBIASN
INP
opampnc
OPERATIONAL
AMPLIFIER
(NO CAP)
INN
I241
VBIAS2

Fig 8.0601HA

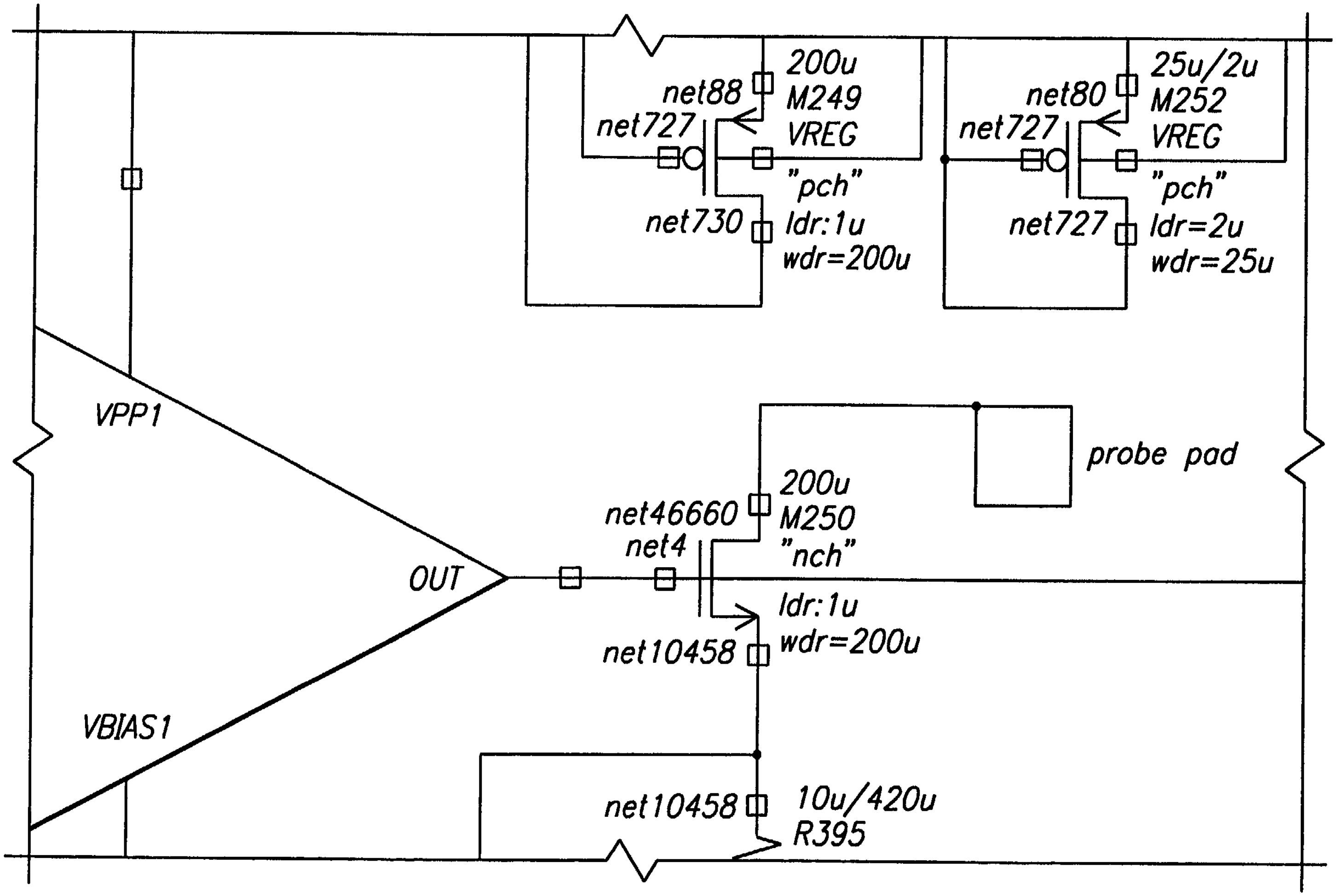

net88
net727
net730
200u
M249
VREG
"pch"
ldr:1u
wdr=200u
net80
net727
net727
25u/2u
M252
VREG
"pch"
ldr=2u
wdr=25u
VPP1
VBIAS1
OUT
probe pad
net46660
net4
200u
M250
"nch"
ldr:1u
wdr=200u
net10458
net10458
10u/420u
R395

Fig 8.0601HB

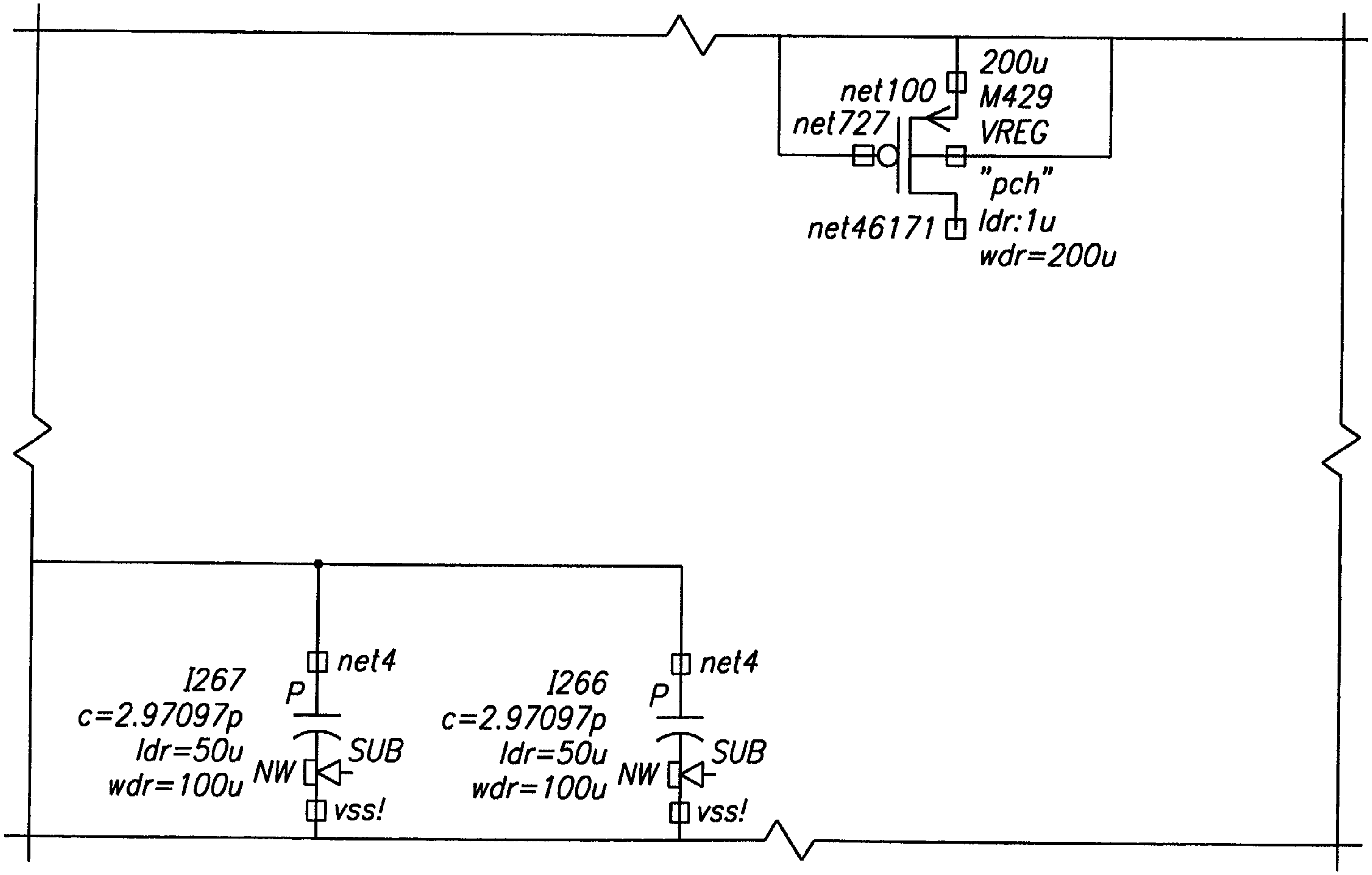

200u
M429
VREG
"pch"
ldr:1u
wdr=200u
net100
net727
net46171
I267
c=2.97097p
ldr=50u
wdr=100u
net4
P
SUB
NW
vss!
I266
c=2.97097p
ldr=50u
wdr=100u
net4
P
SUB
NW
vss!

Fig 8.060JHC

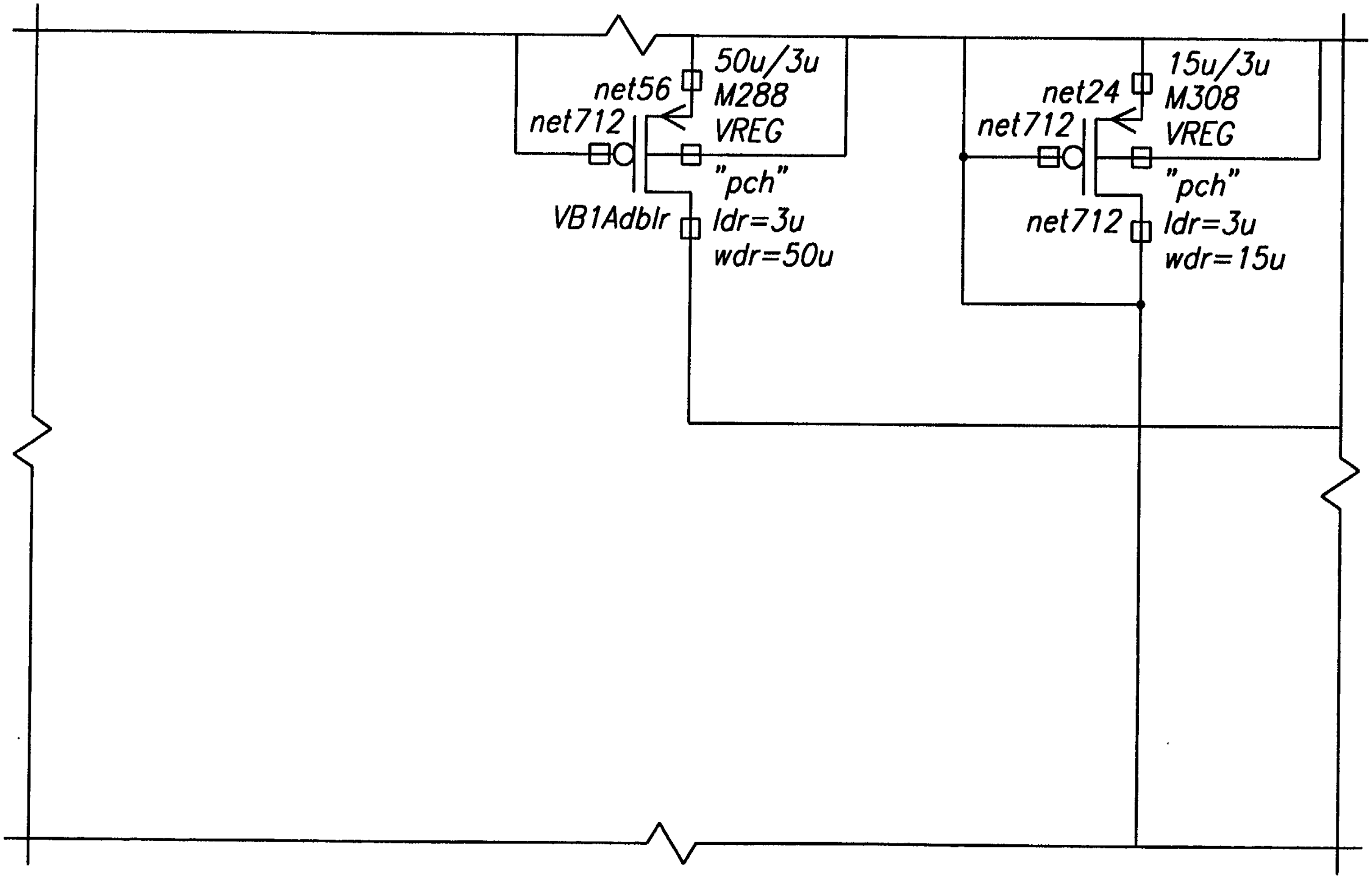

net56
net712
50u/3u
M288
VREG
"pch"
ldr=3u
wdr=50u
VB1Adblr
net24
net712
15u/3u
M308
VREG
"pch"
ldr=3u
wdr=15u
net712

Fig 8.0607HD

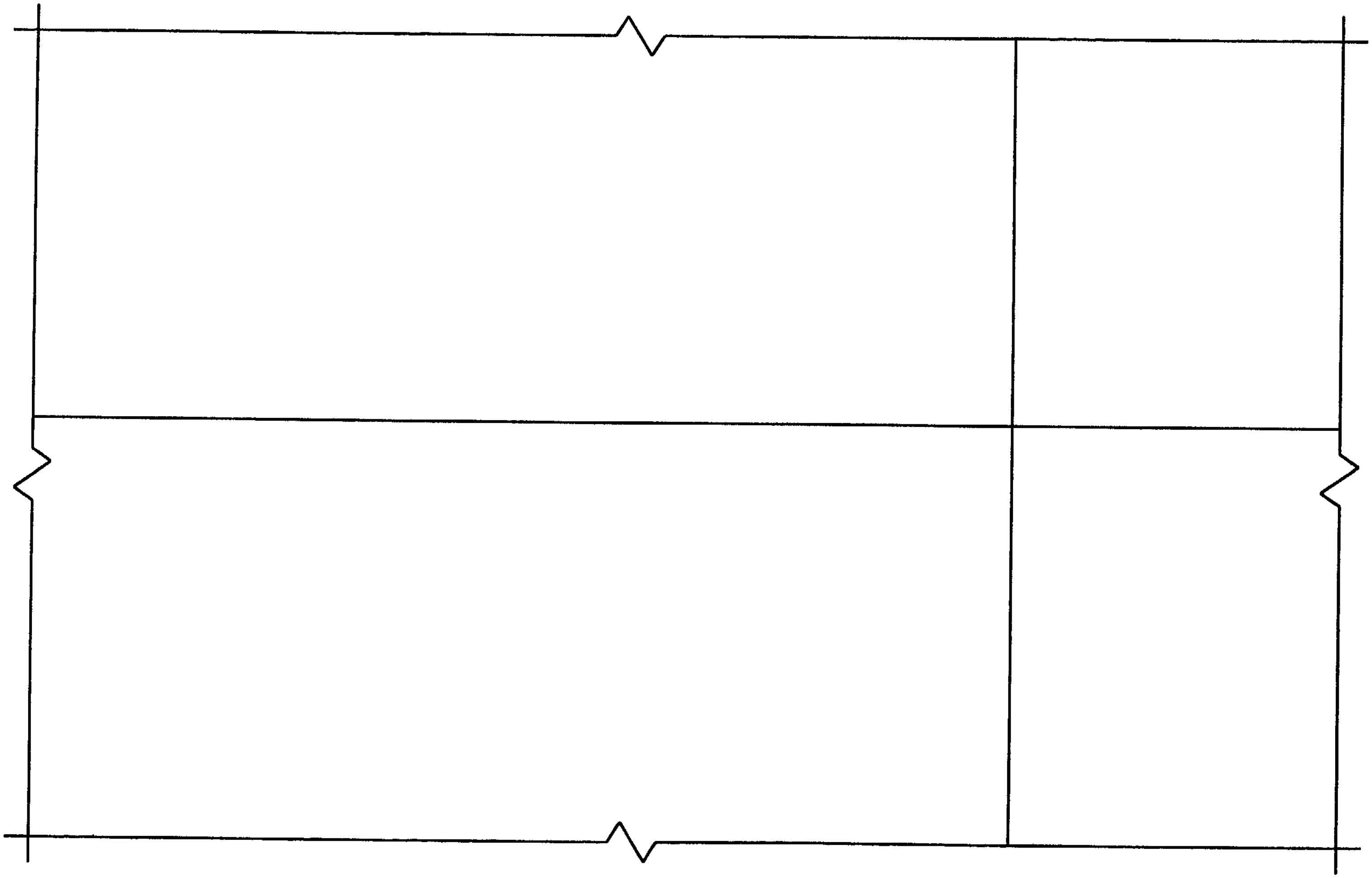
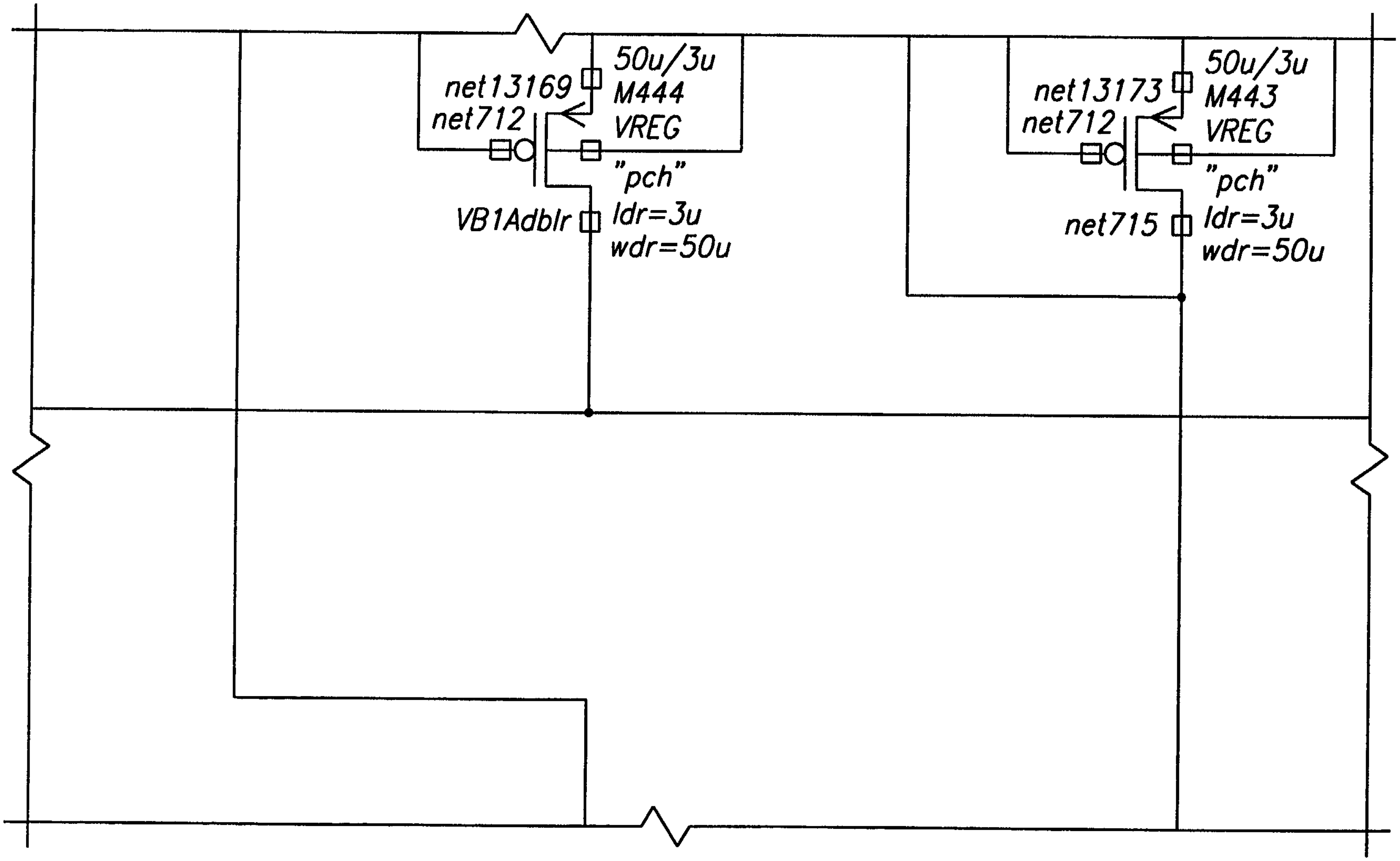


Fig 8.0607AE



net13169
net712
50u/3u
M444
VREG
"pch"
VB1Adblr
ldr=3u
wdr=50u
net13173
net712
50u/3u
M443
VREG
"pch"
net715
ldr=3u
wdr=50u

Fig 8.0601HF

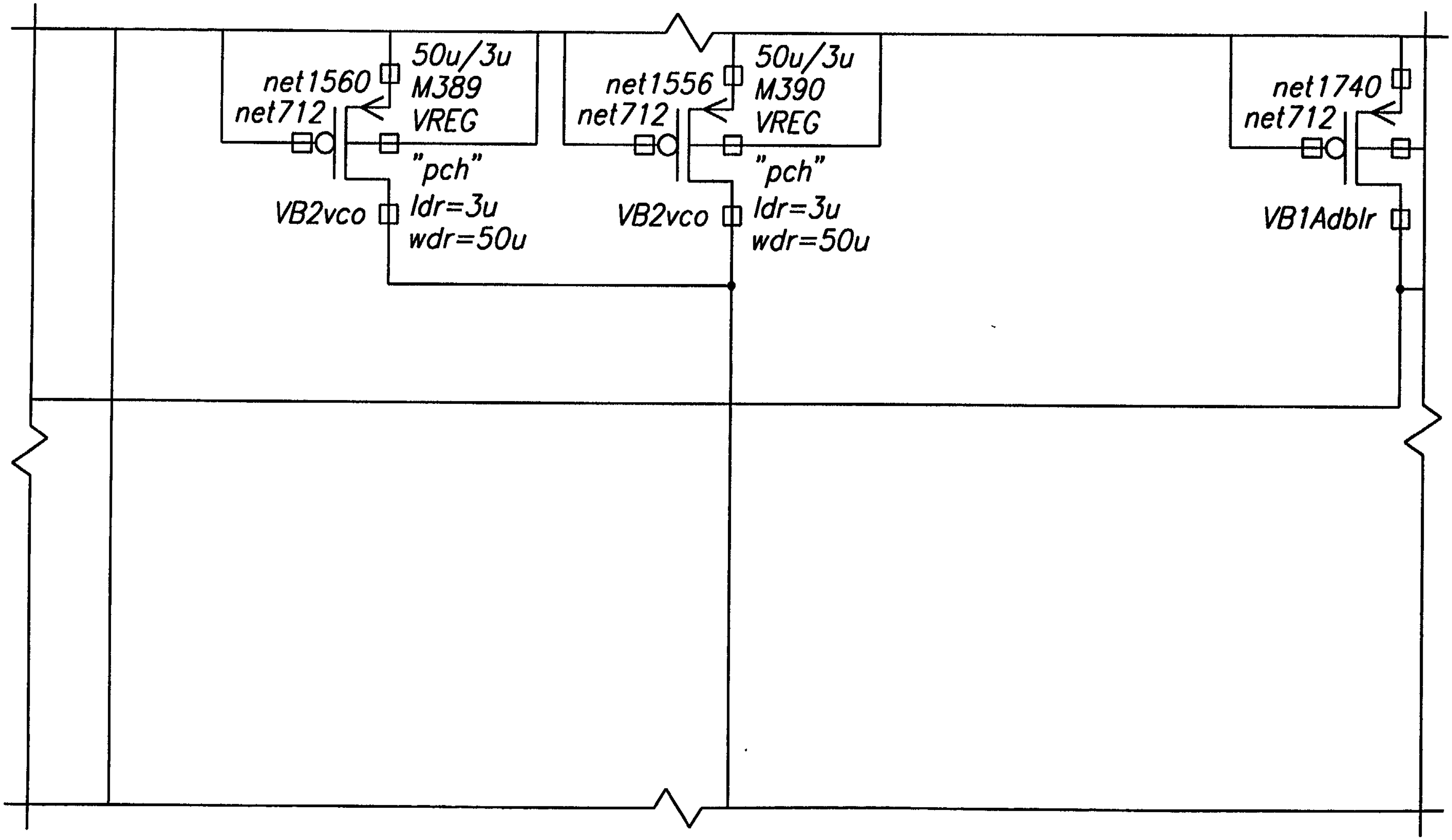

net1560
net712
50u/3u
M389
VREG
"pch"
VB2vco
ldr=3u
wdr=50u
net1556
net712
50u/3u
M390
VREG
"pch"
VB2vco
ldr=3u
wdr=50u
net1740
net712
VB1Adblr

Fig 8.0607HG

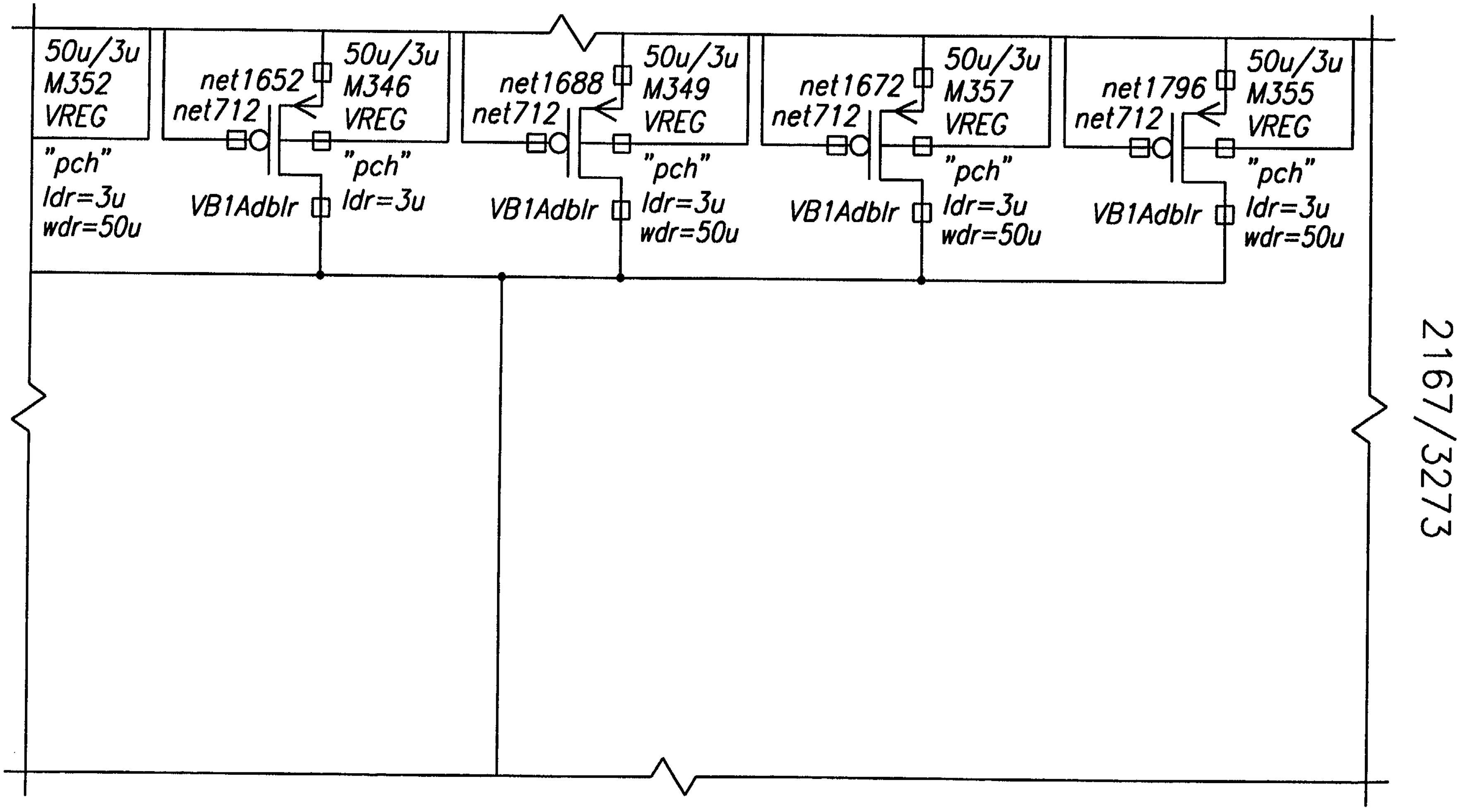

50u/3u
M352
VREG
"pch"
ldr=3u
wdr=50u
net1652
net712
50u/3u
M346
VREG
"pch"
ldr=3u
VB1Adblr
net1688
net712
50u/3u
M349
VREG
"pch"
ldr=3u
wdr=50u
VB1Adblr
net1672
net712
50u/3u
M357
VREG
"pch"
ldr=3u
wdr=50u
VB1Adblr
net1796
net712
50u/3u
M355
VREG
"pch"
ldr=3u
wdr=50u
VB1Adblr

Fig 8.0607HH

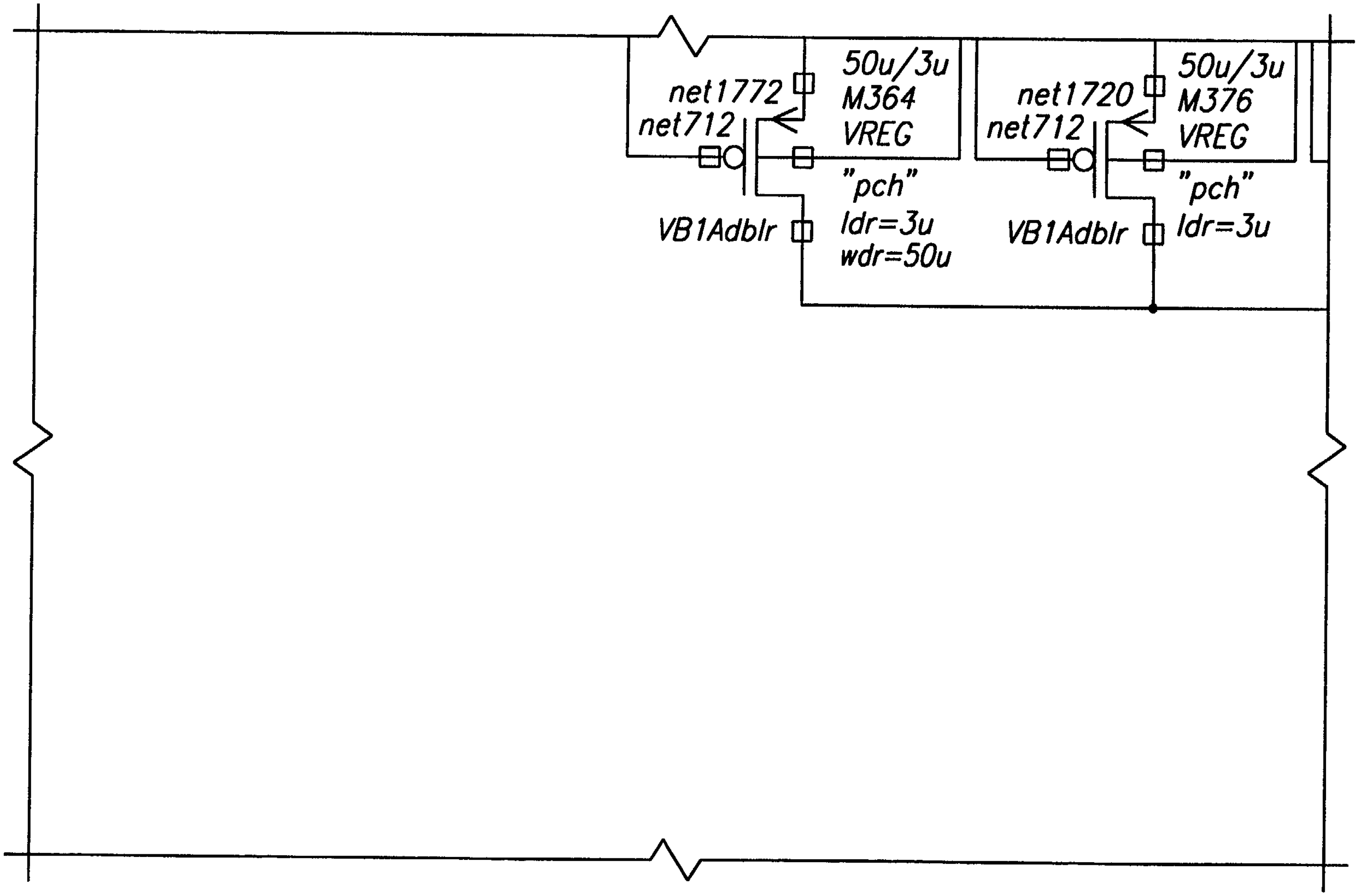

net1772
net712
50u/3u
M364
VREG
"pch"
ldr=3u
wdr=50u
VB1Adblr
net1720
net712
50u/3u
M376
VREG
"pch"
ldr=3u
VB1Adblr

Fig 8.0601HI

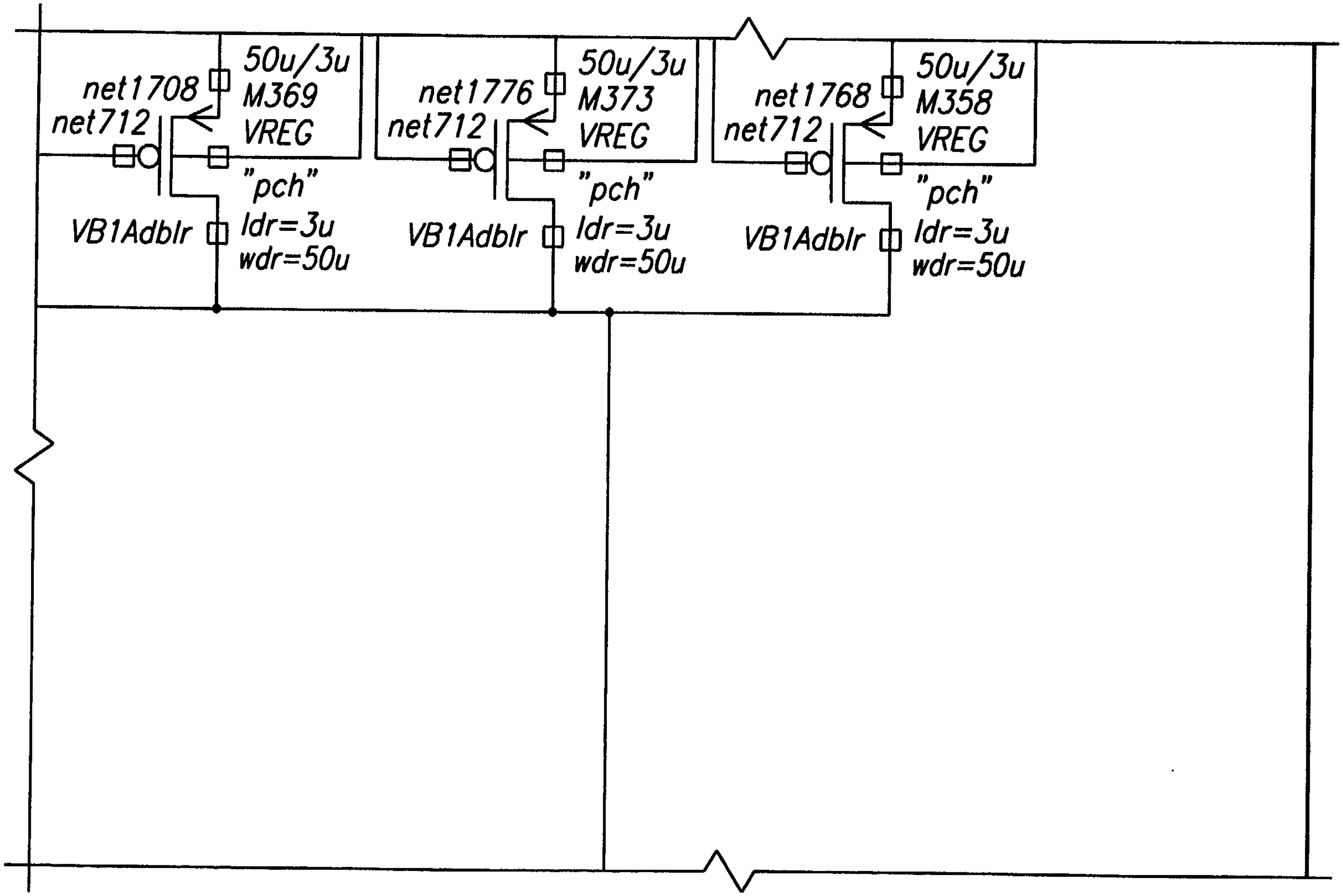

net1708
net712
50u/3u
M369
VREG
"pch"
ldr=3u
wdr=50u
VB1Adblr
net1776
net712
50u/3u
M373
VREG
"pch"
ldr=3u
wdr=50u
VB1Adblr
net1768
net712
50u/3u
M358
VREG
"pch"
ldr=3u
wdr=50u
VB1Adblr

Fig 8.0607HJ

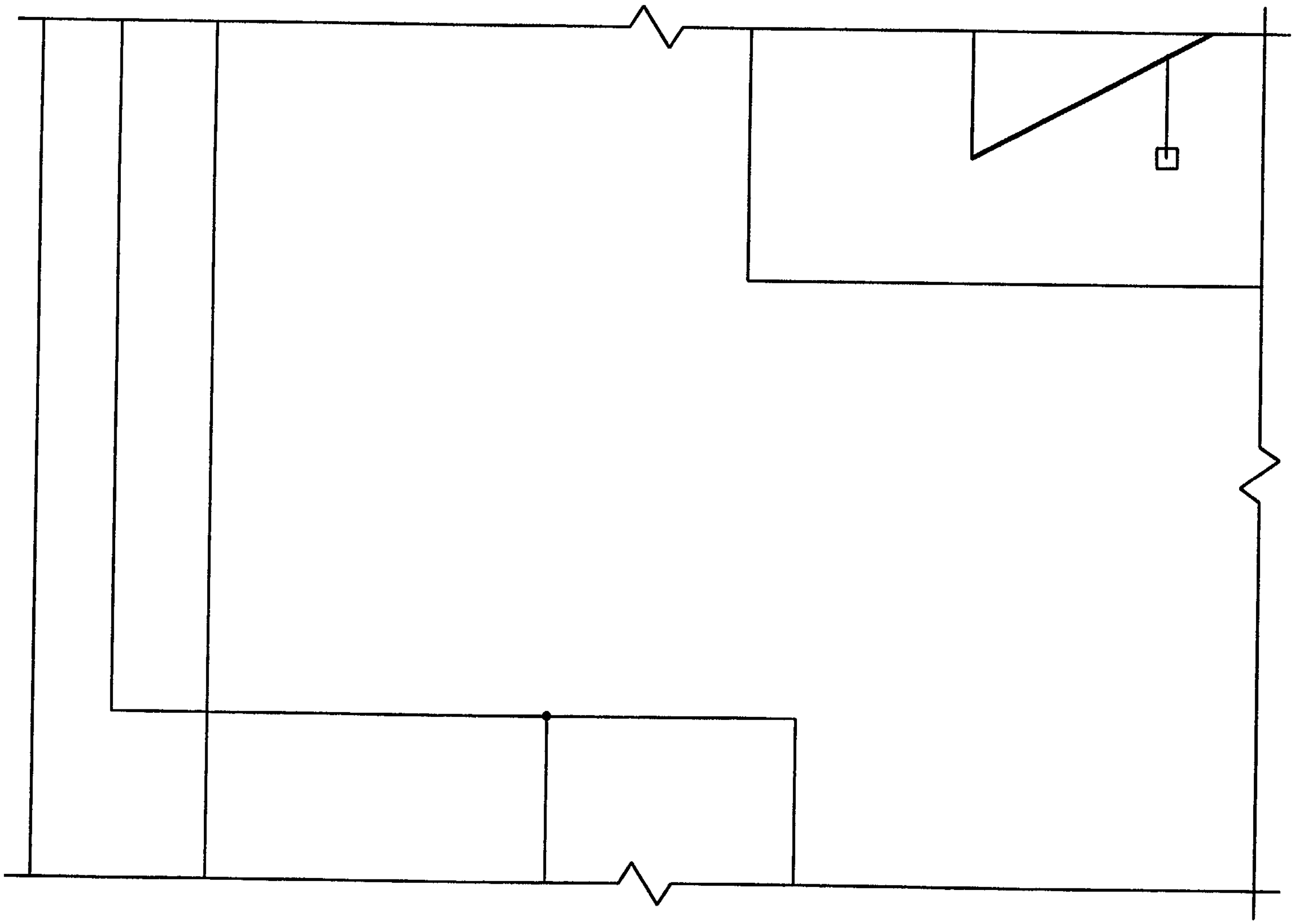


Fig 8.06071A

2170/3273

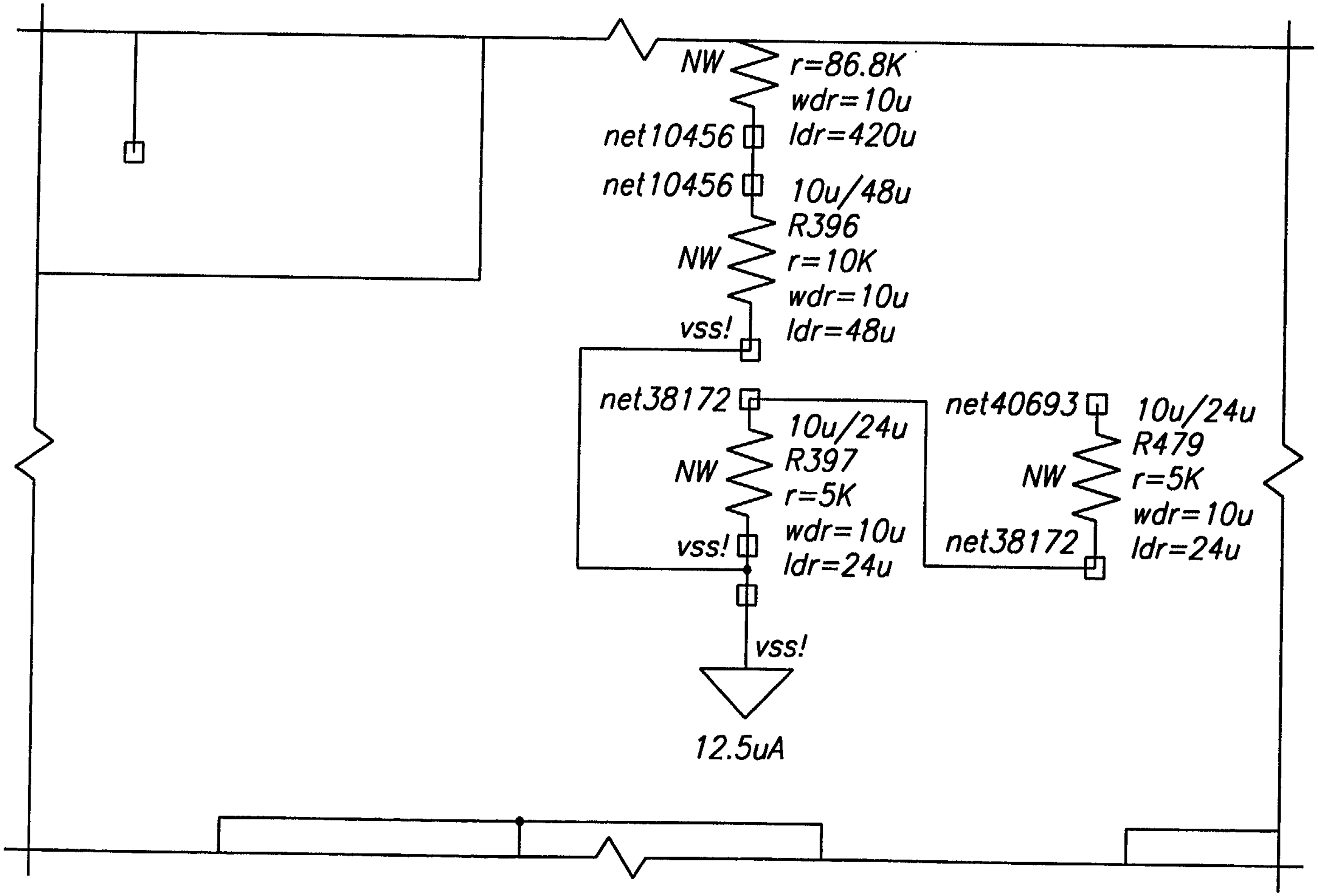

NW
r=86.8K
wdr=10u
ldr=420u
net10456
net10456
10u/48u
R396
NW
r=10K
wdr=10u
ldr=48u
vss!
net38172
10u/24u
R397
NW
r=5K
vss!
wdr=10u
ldr=24u
net40693
10u/24u
R479
NW
r=5K
net38172
wdr=10u
ldr=24u
vss!
12.5uA

Fig 8.06071B

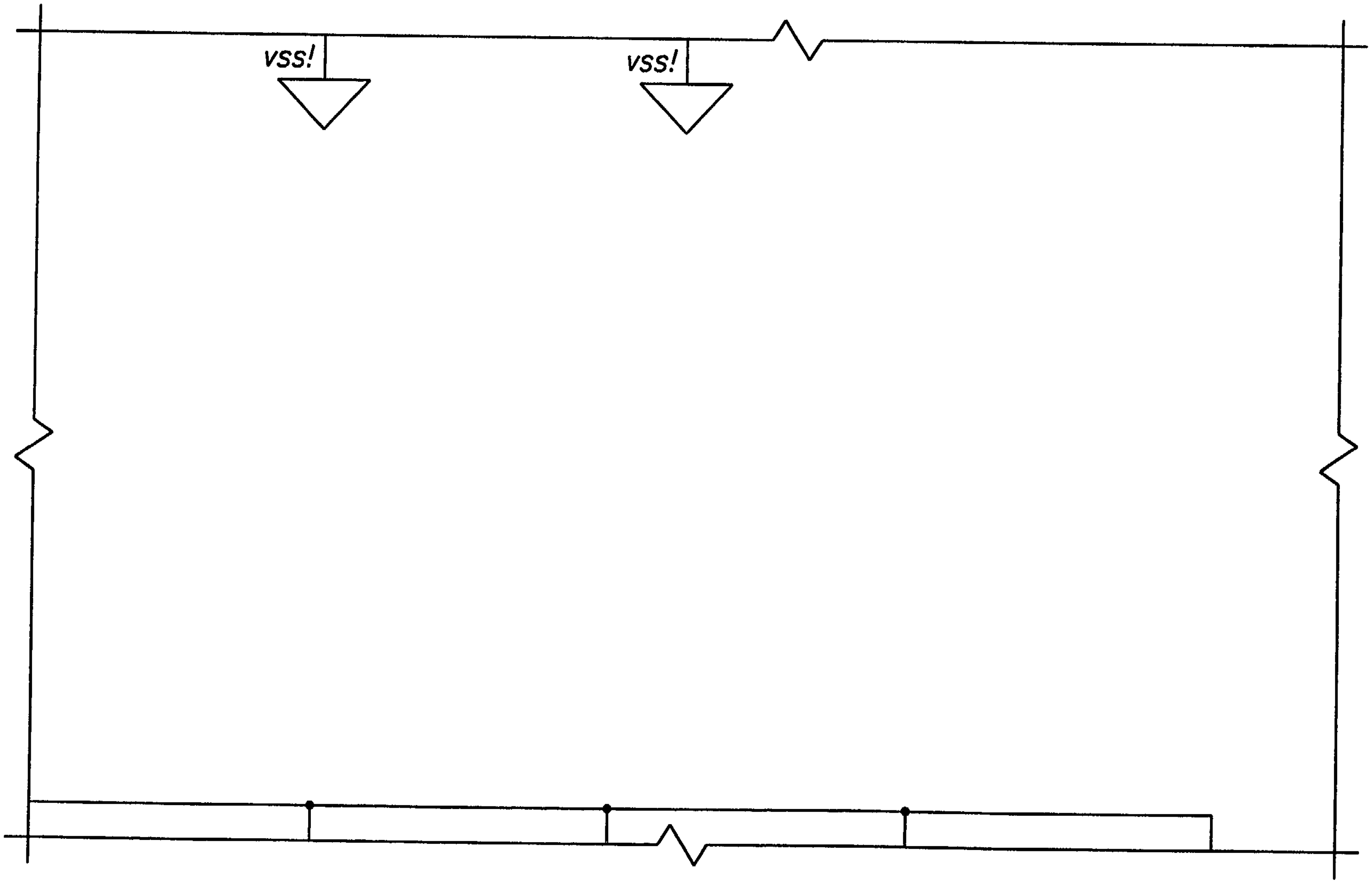


Fig 8.0607IC

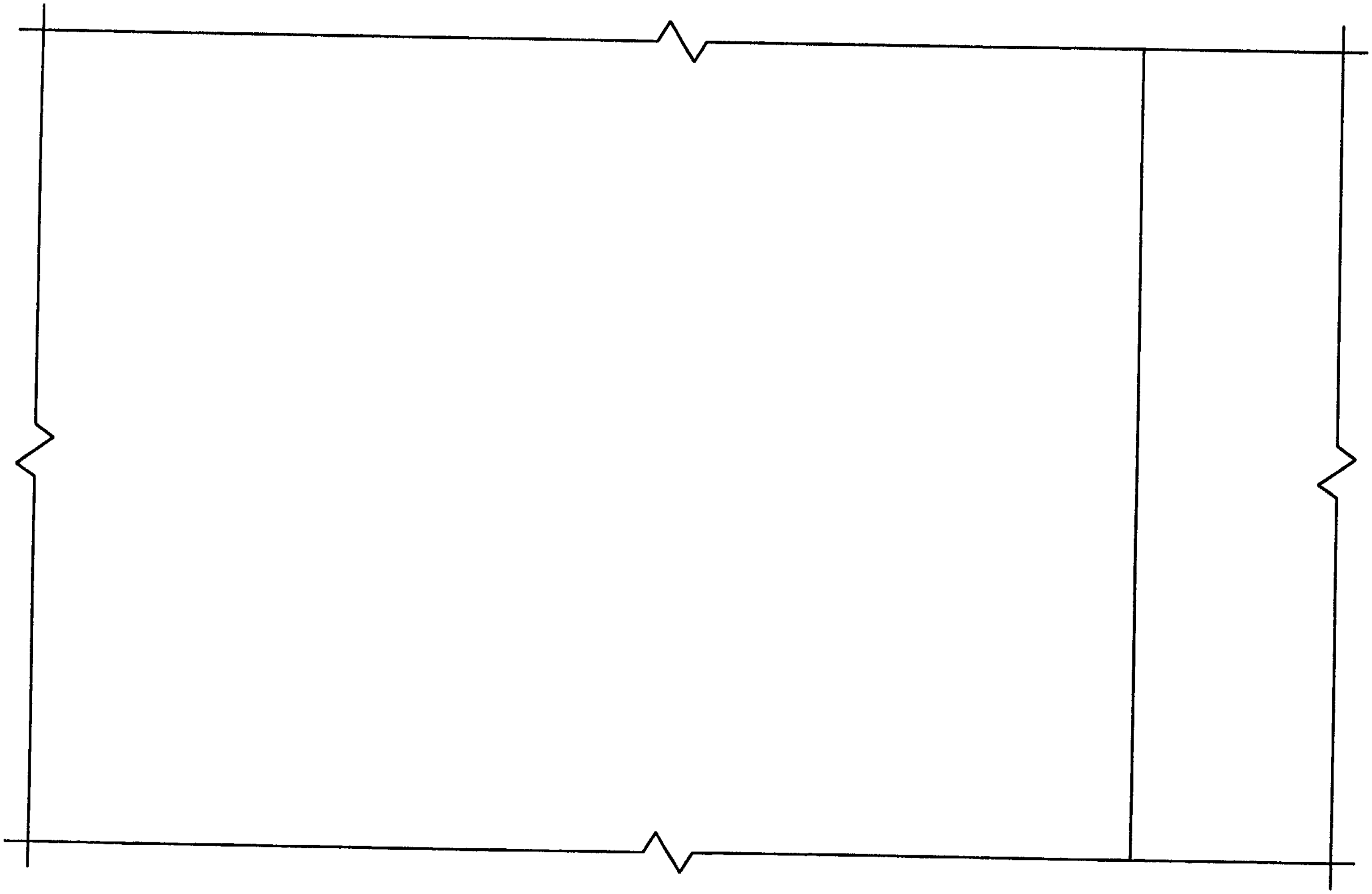


Fig 8.06071D

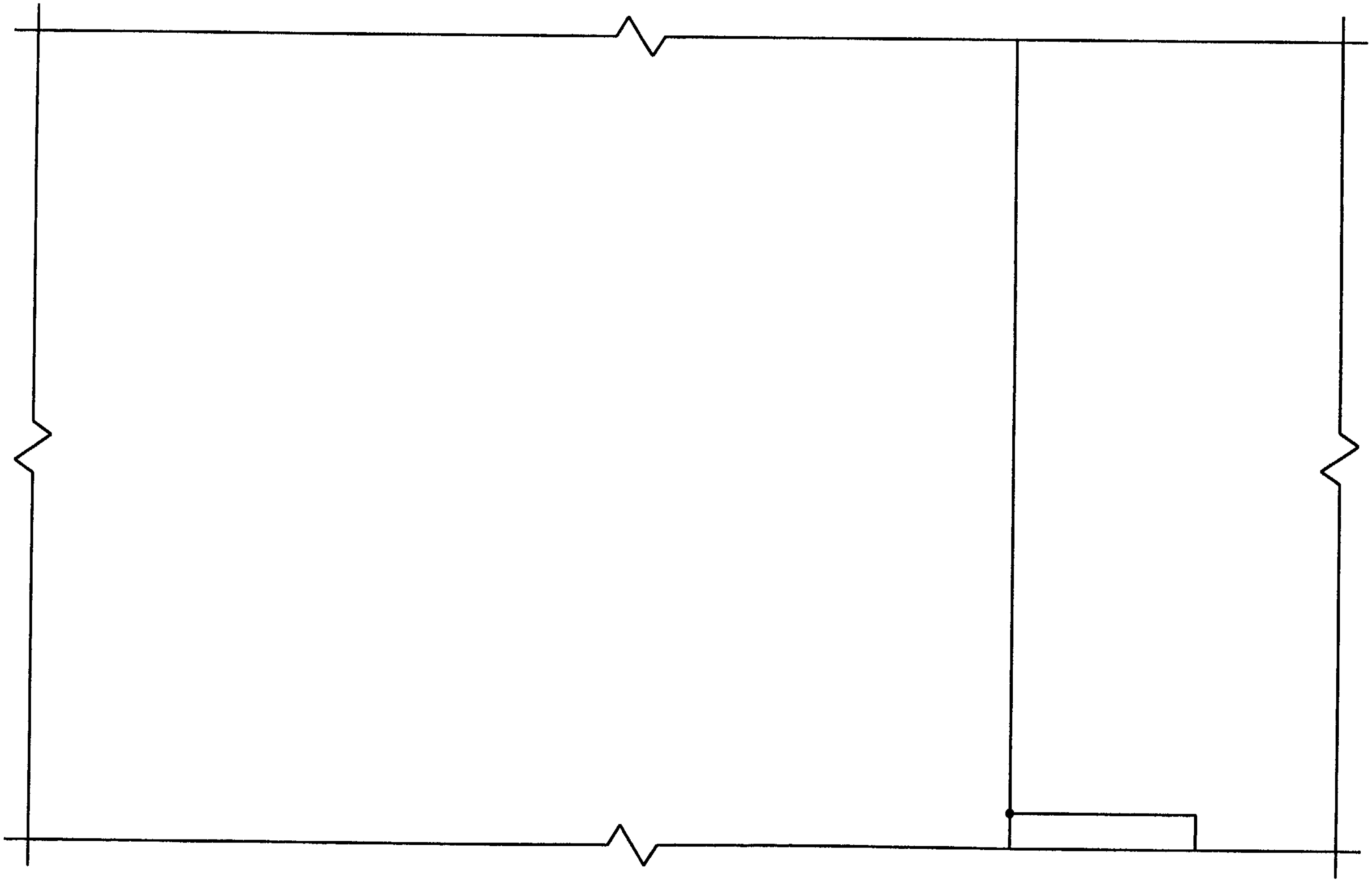


Fig 8.0607IE

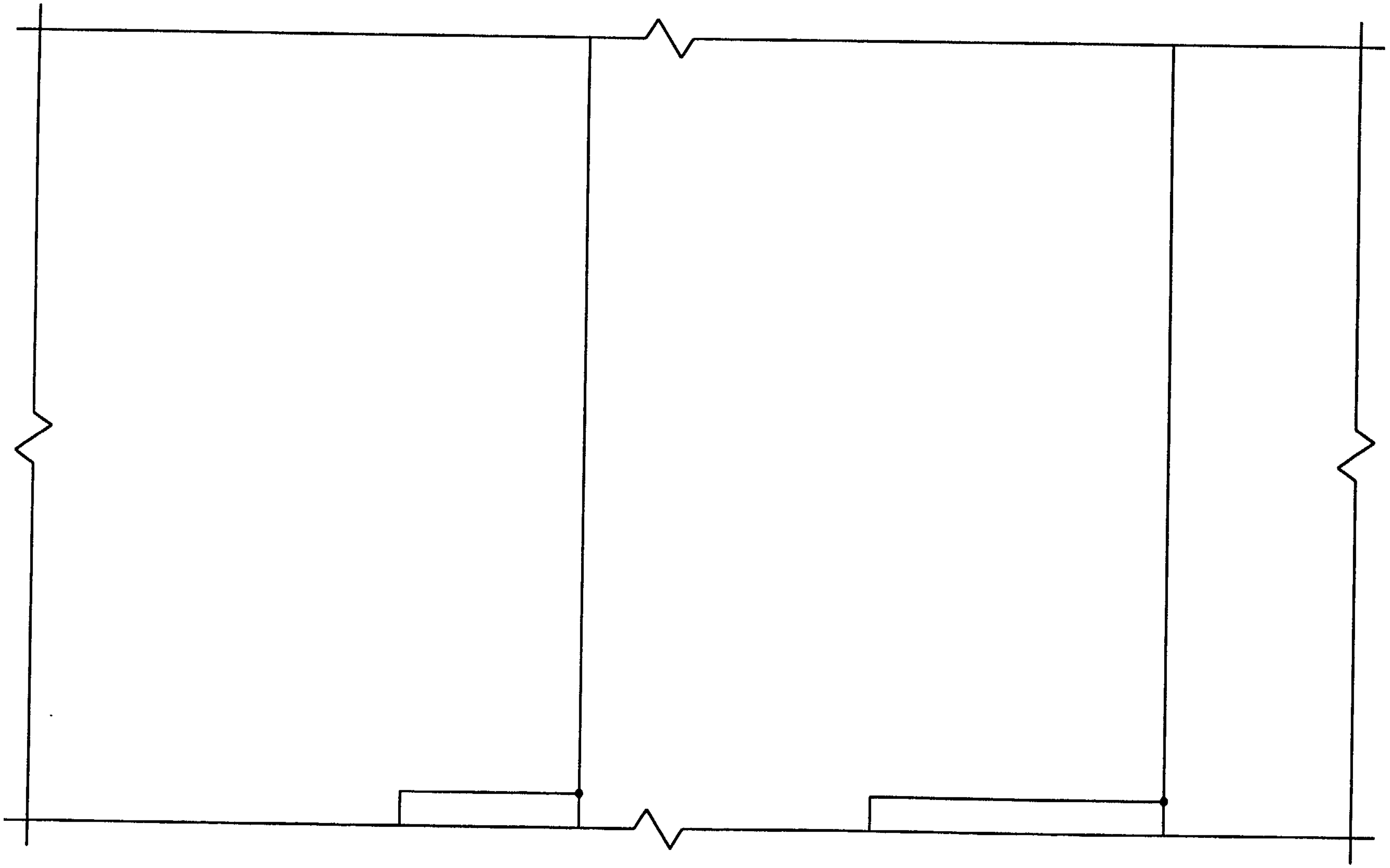


Fig 8.0601F

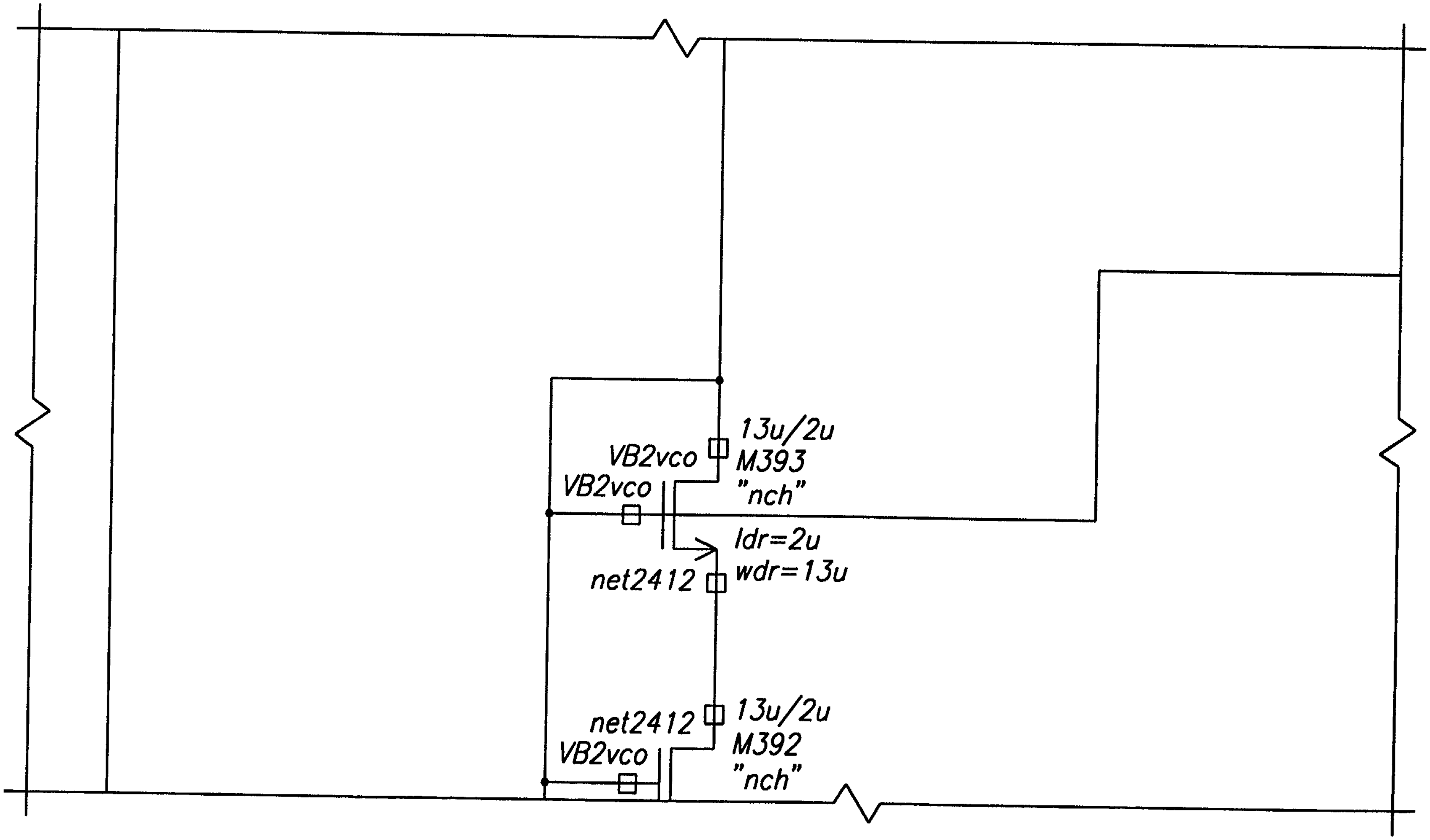

13u/2u
M393
"nch"
VB2vco
VB2vco
ldr=2u
wdr=13u
net2412
13u/2u
M392
"nch"
net2412
VB2vco
2176/3273

Fig 8.060716

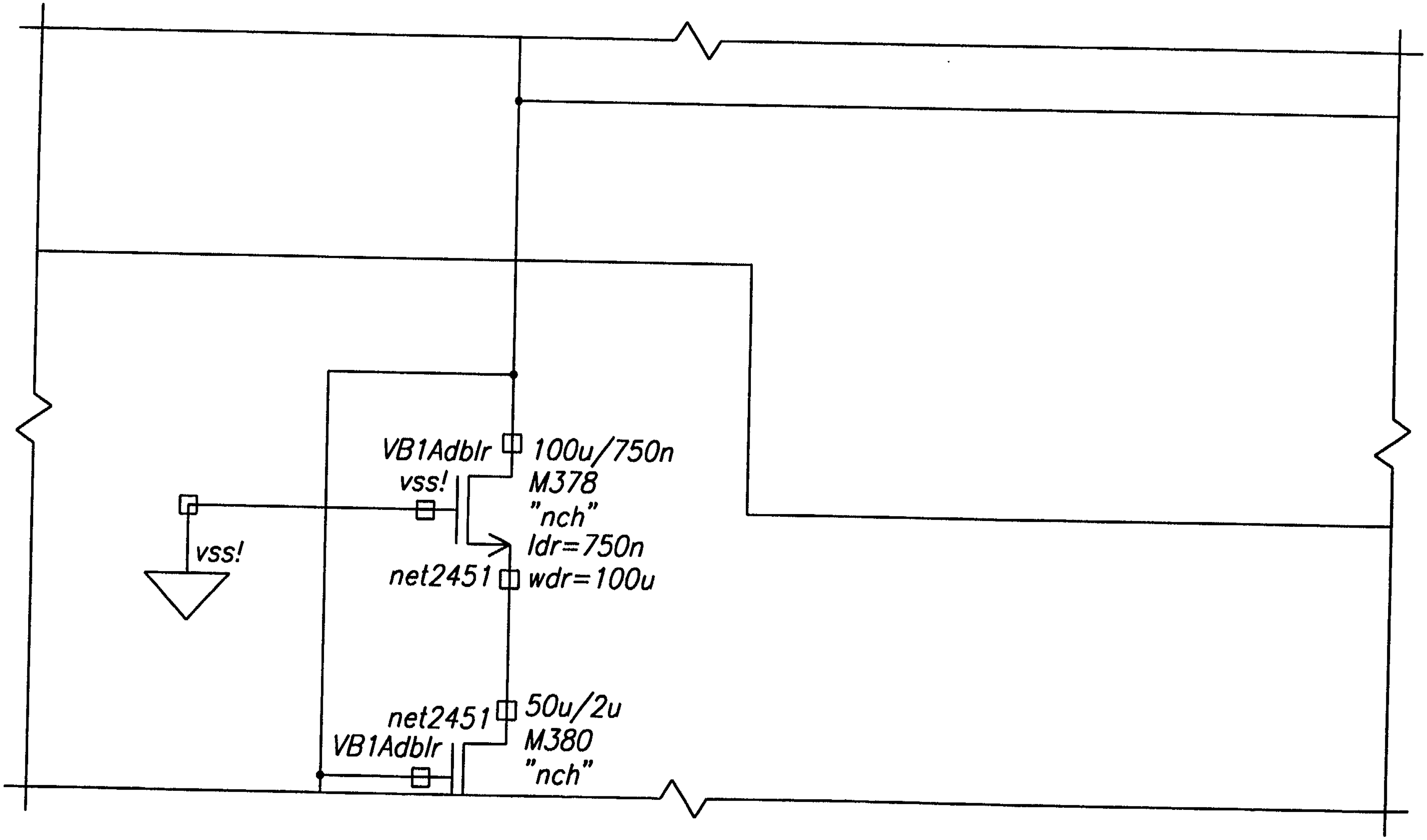

VB1Adblr
vss!
100u/750n
M378
"nch"
ldr=750n
wdr=100u
net2451
vss!
net2451
VB1Adblr
50u/2u
M380
"nch"

Fig 8.0607IH

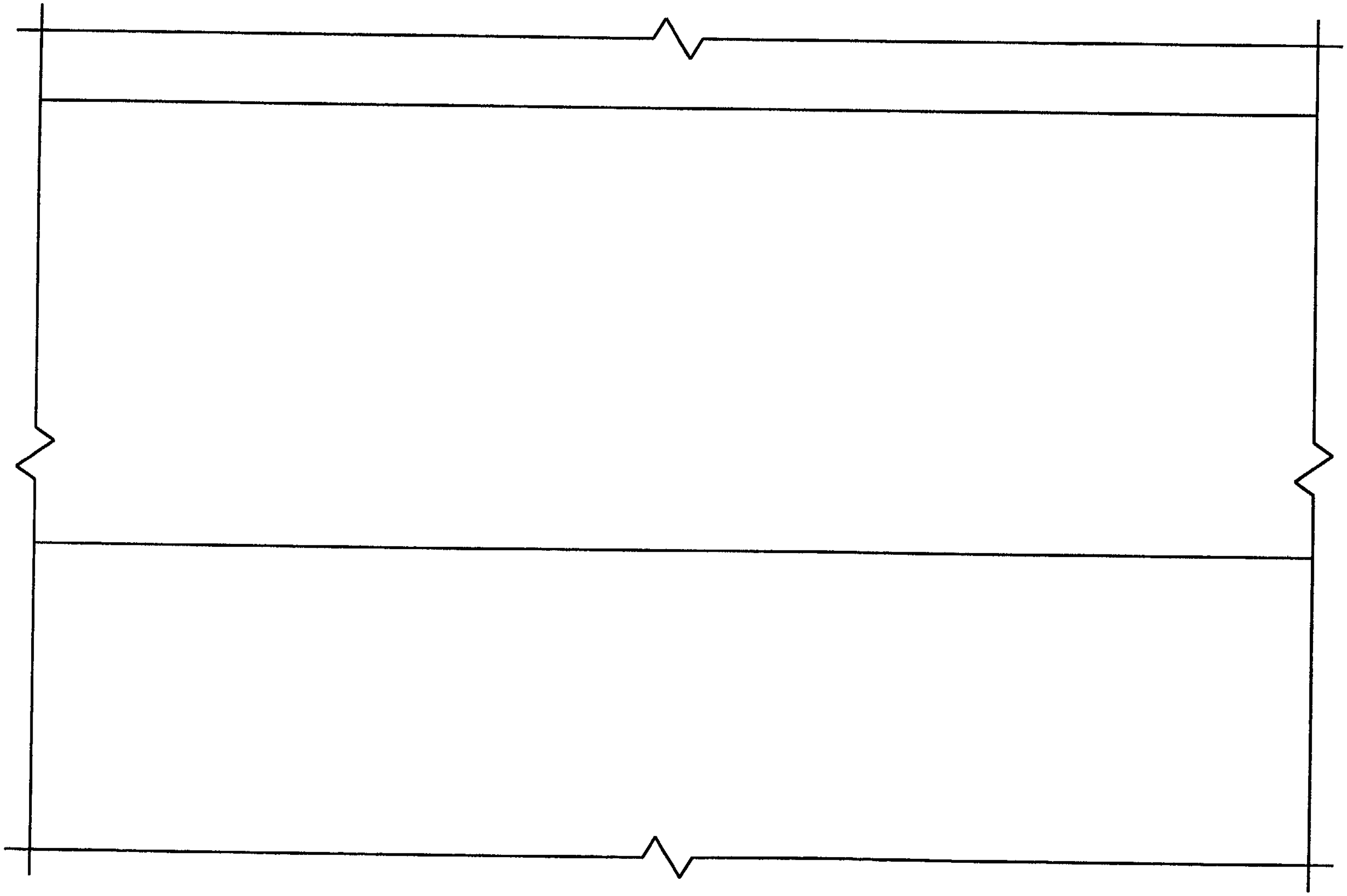


Fig 8.060711

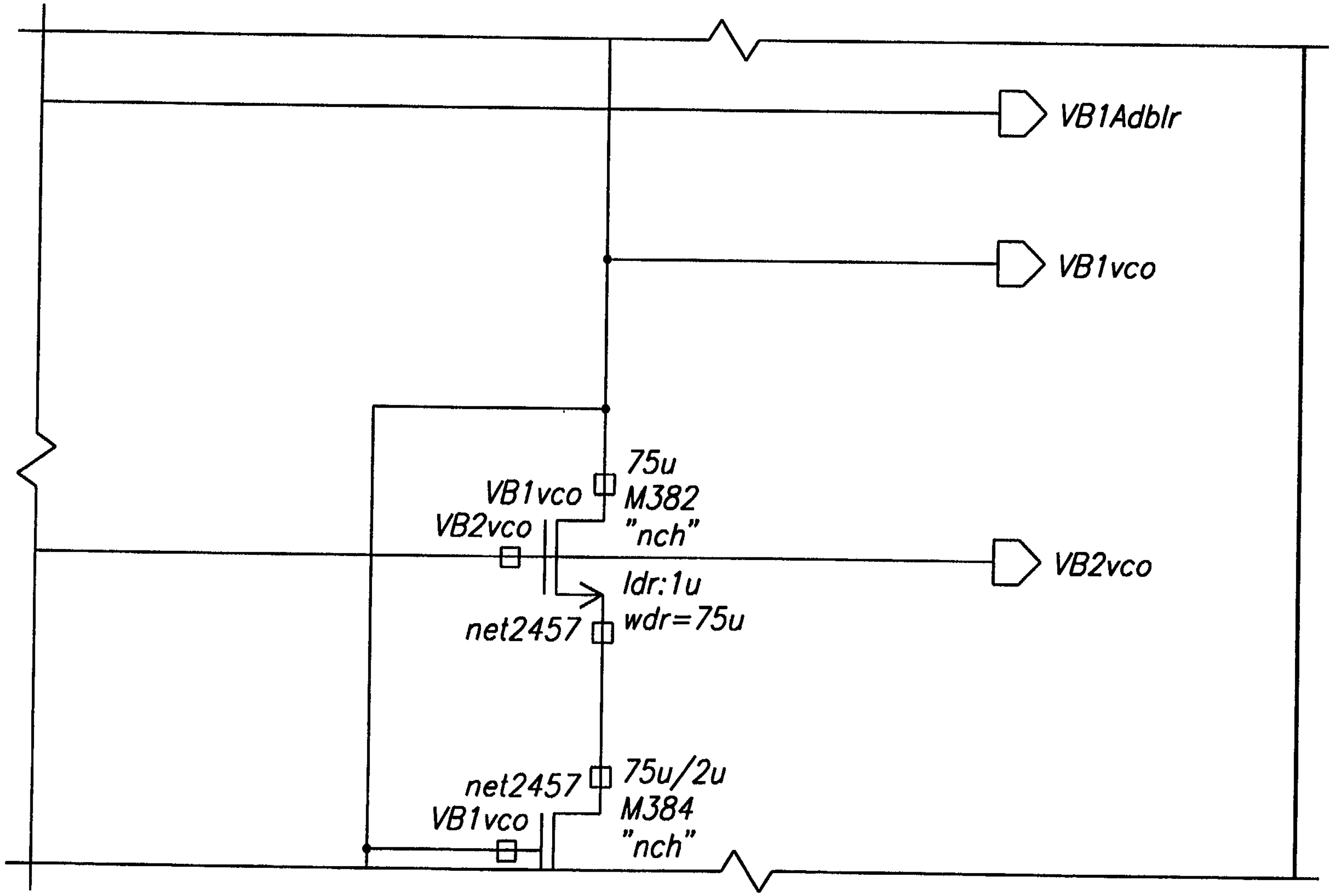

VB1Adblr
VB1vco
VB2vco
75u
M382
"nch"
VB1vco
VB2vco
ldr:1u
wdr=75u
net2457
75u/2u
M384
"nch"
net2457
VB1vco

Fig 8.0607IJ

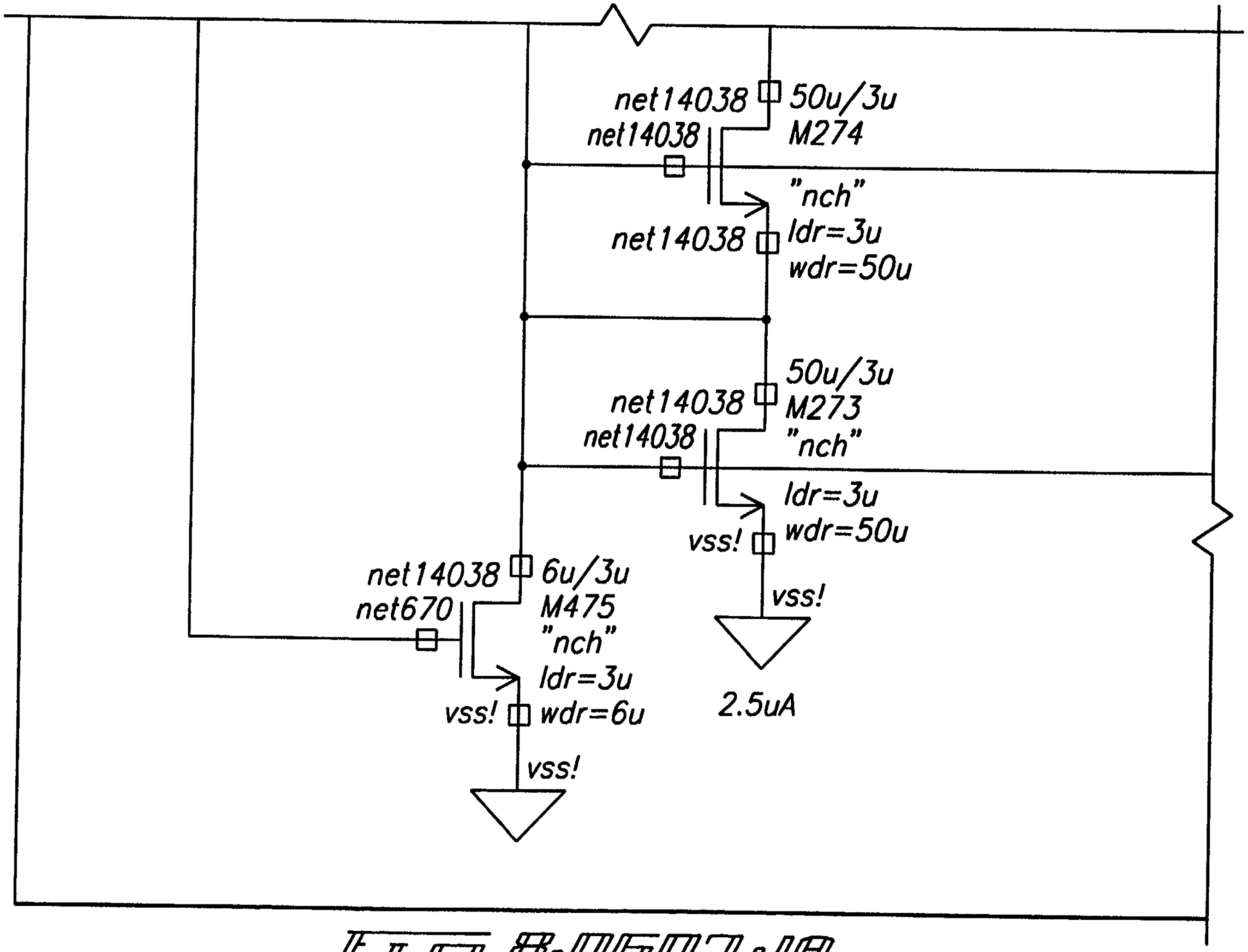

net14038
50u/3u
M274
net14038
"nch"
net14038
ldr=3u
wdr=50u
50u/3u
net14038
M273
net14038
"nch"
ldr=3u
vss!
wdr=50u
vss!
2.5uA
net14038
6u/3u
net670
M475
"nch"
ldr=3u
vss!
wdr=6u
vss!

Fig 8.0607uA

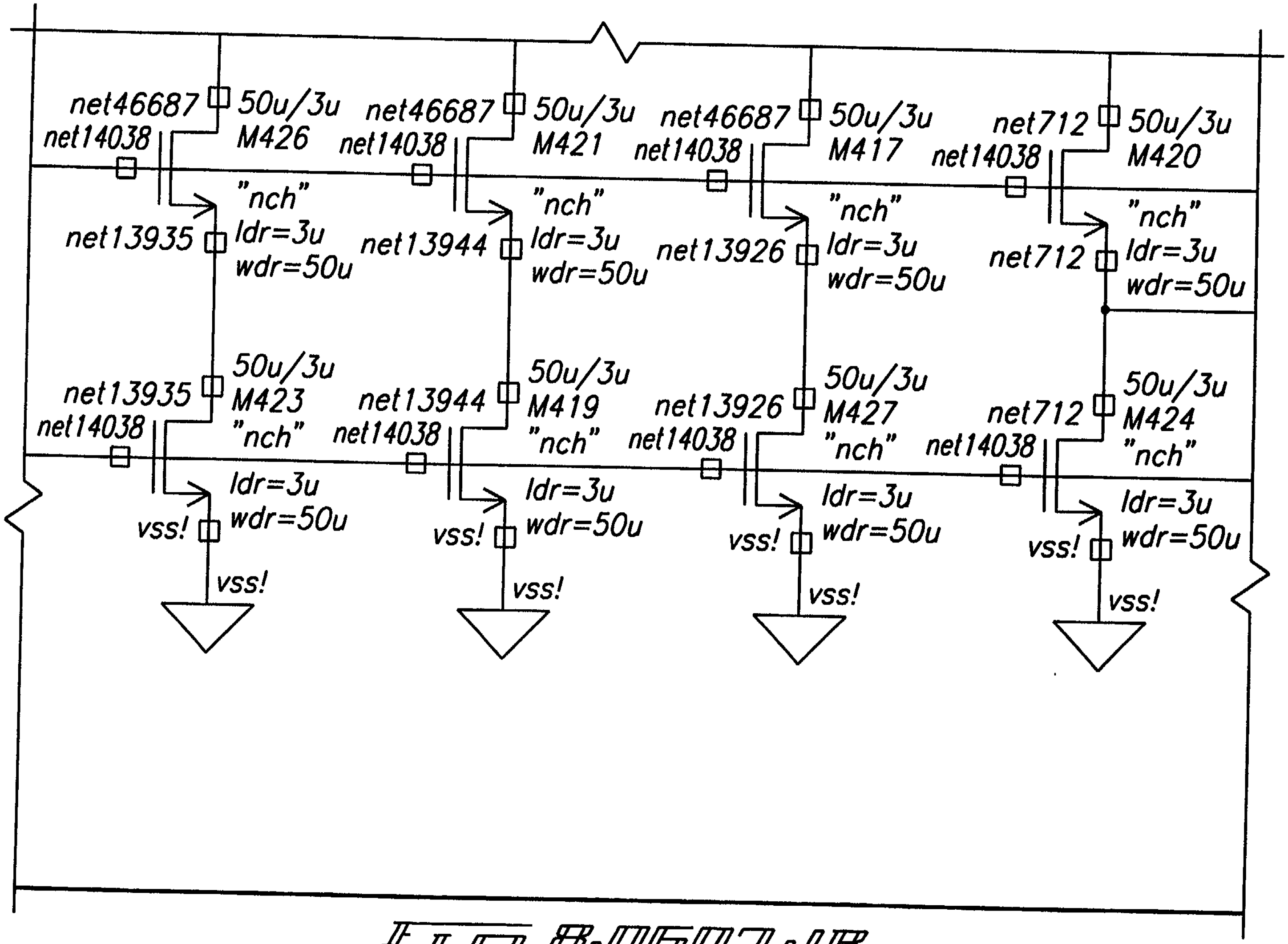

net46687
net14038
50u/3u
M426
"nch"
net13935
ldr=3u
wdr=50u
net46687
net14038
50u/3u
M421
"nch"
net13944
ldr=3u
wdr=50u
net46687
net14038
50u/3u
M417
"nch"
net13926
ldr=3u
wdr=50u
net712
net14038
50u/3u
M420
"nch"
net712
ldr=3u
wdr=50u
net13935
net14038
50u/3u
M423
"nch"
ldr=3u
wdr=50u
vss!
vss!
net13944
net14038
50u/3u
M419
"nch"
ldr=3u
wdr=50u
vss!
vss!
net13926
net14038
50u/3u
M427
"nch"
ldr=3u
wdr=50u
vss!
vss!
net712
net14038
50u/3u
M424
"nch"
ldr=3u
wdr=50u
vss!
vss!

Fig 8.0607JB

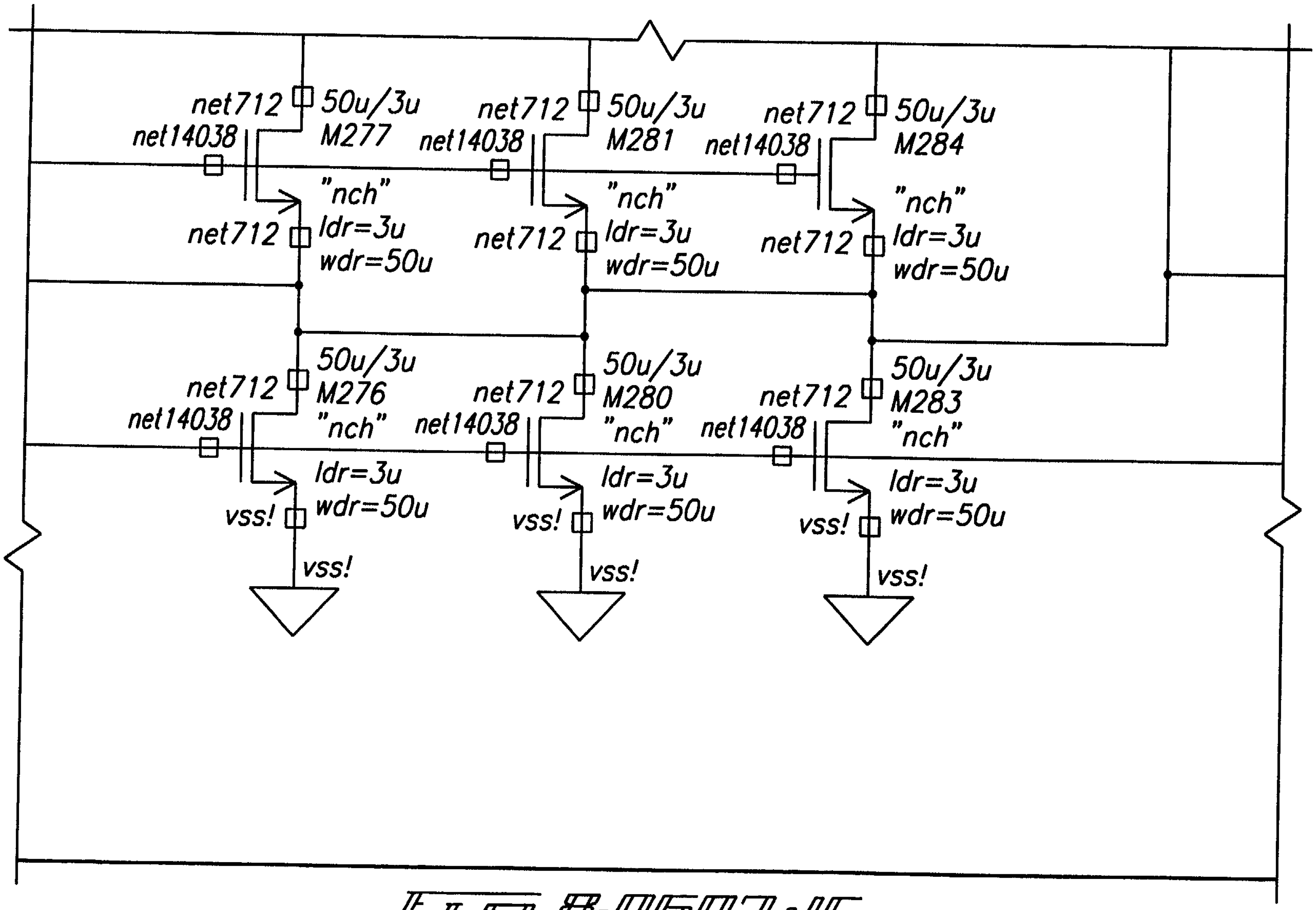

net712
50u/3u
M277
net14038
"nch"
net712
ldr=3u
wdr=50u
net712
50u/3u
M281
net14038
"nch"
net712
ldr=3u
wdr=50u
net712
50u/3u
M284
net14038
"nch"
net712
ldr=3u
wdr=50u
net712
50u/3u
M276
"nch"
net14038
ldr=3u
wdr=50u
vss!
vss!
net712
50u/3u
M280
"nch"
net14038
ldr=3u
wdr=50u
vss!
vss!
net712
50u/3u
M283
"nch"
net14038
ldr=3u
wdr=50u
vss!
vss!

Fig 8.0607.JC

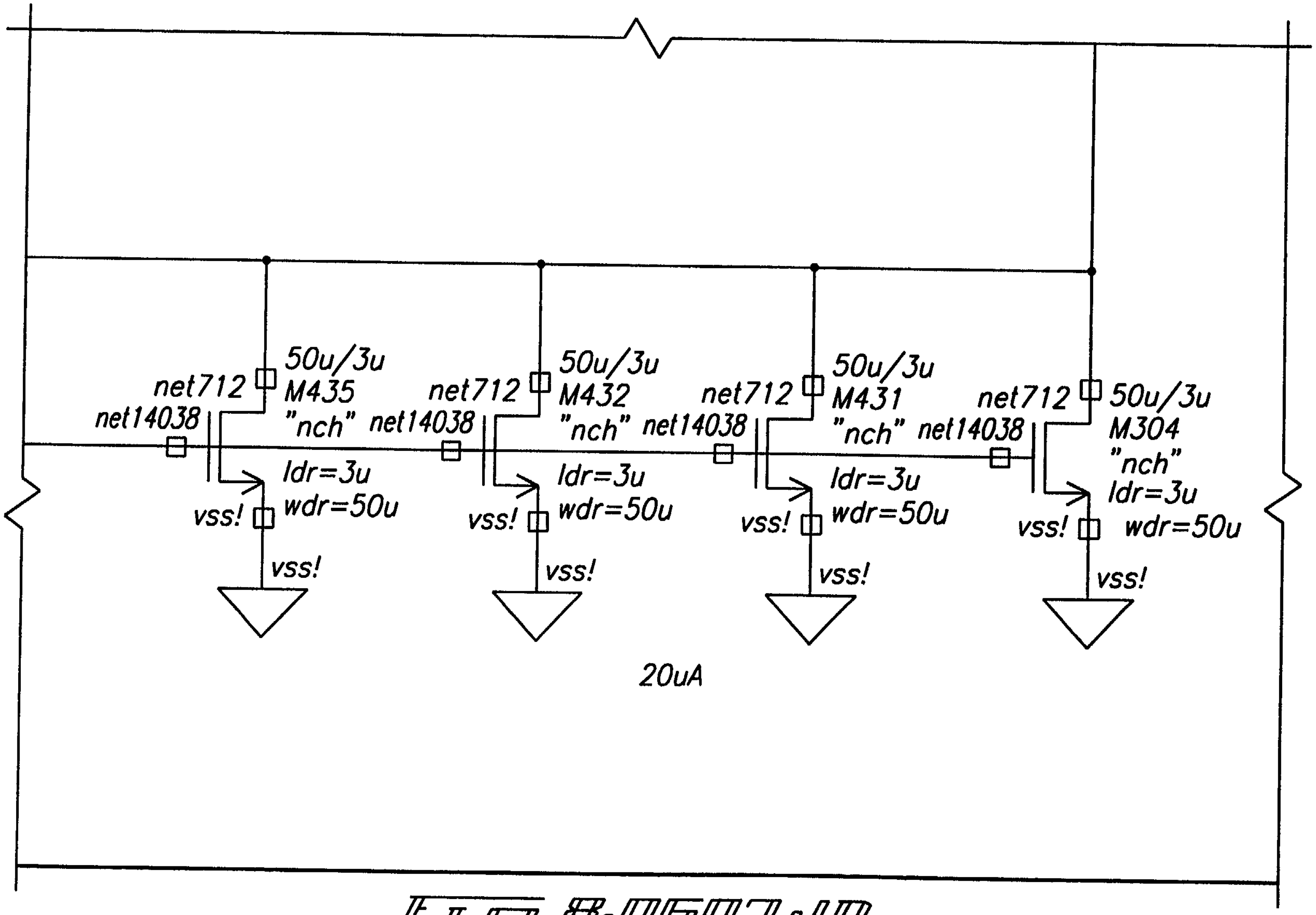

net712
net14038
50u/3u
M435
"nch"
ldr=3u
wdr=50u
vss!
vss!
net712
net14038
50u/3u
M432
"nch"
ldr=3u
wdr=50u
vss!
vss!
net712
net14038
50u/3u
M431
"nch"
ldr=3u
wdr=50u
vss!
vss!
net712
net14038
50u/3u
M304
"nch"
ldr=3u
wdr=50u
vss!
vss!
20uA

Fig 8.0601.1D

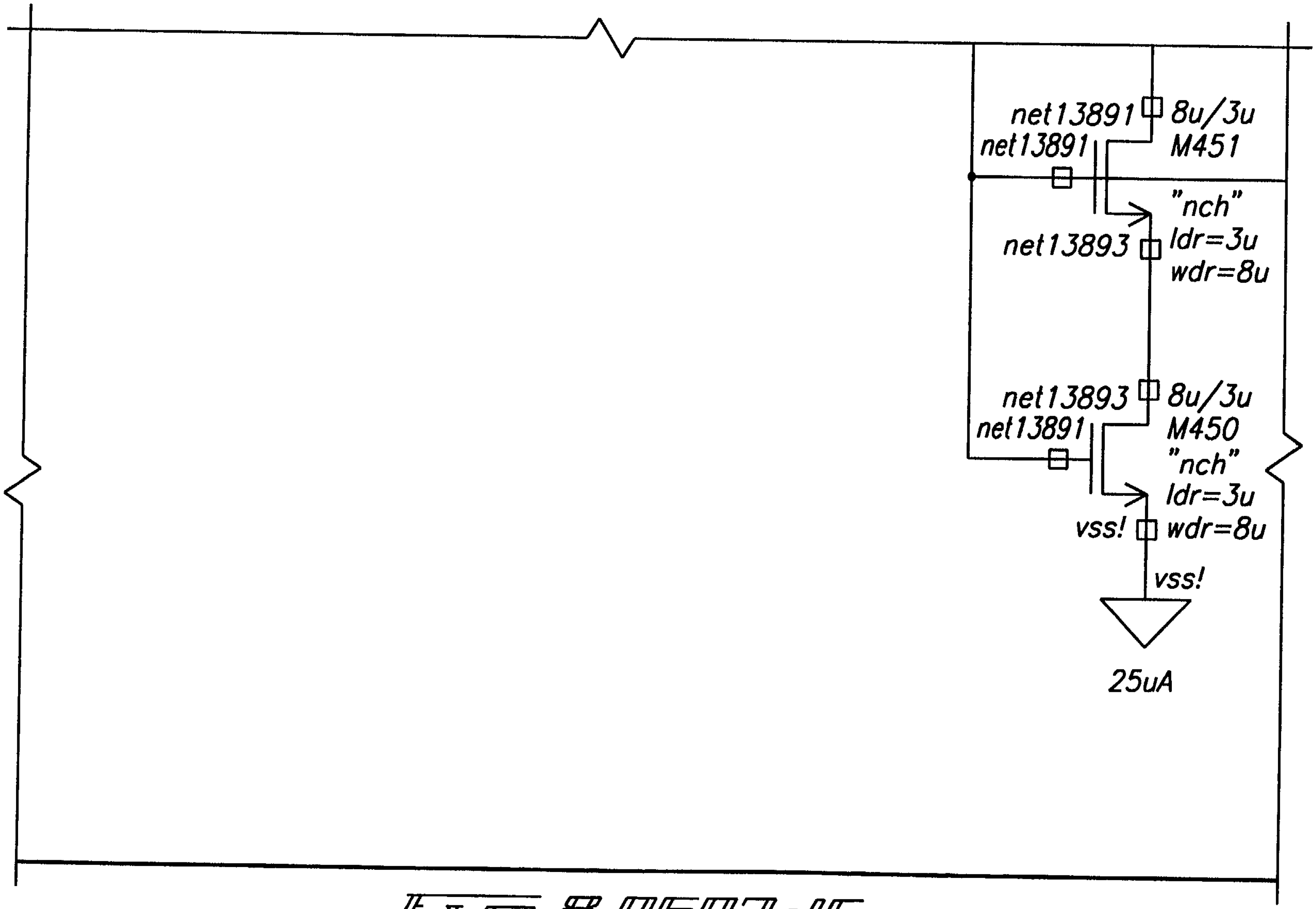

net13891
8u/3u
M451
net13891
"nch"
net13893
ldr=3u
wdr=8u
net13893
8u/3u
M450
net13891
"nch"
ldr=3u
vss!
wdr=8u
vss!
25uA

Fig 8.0607.1E

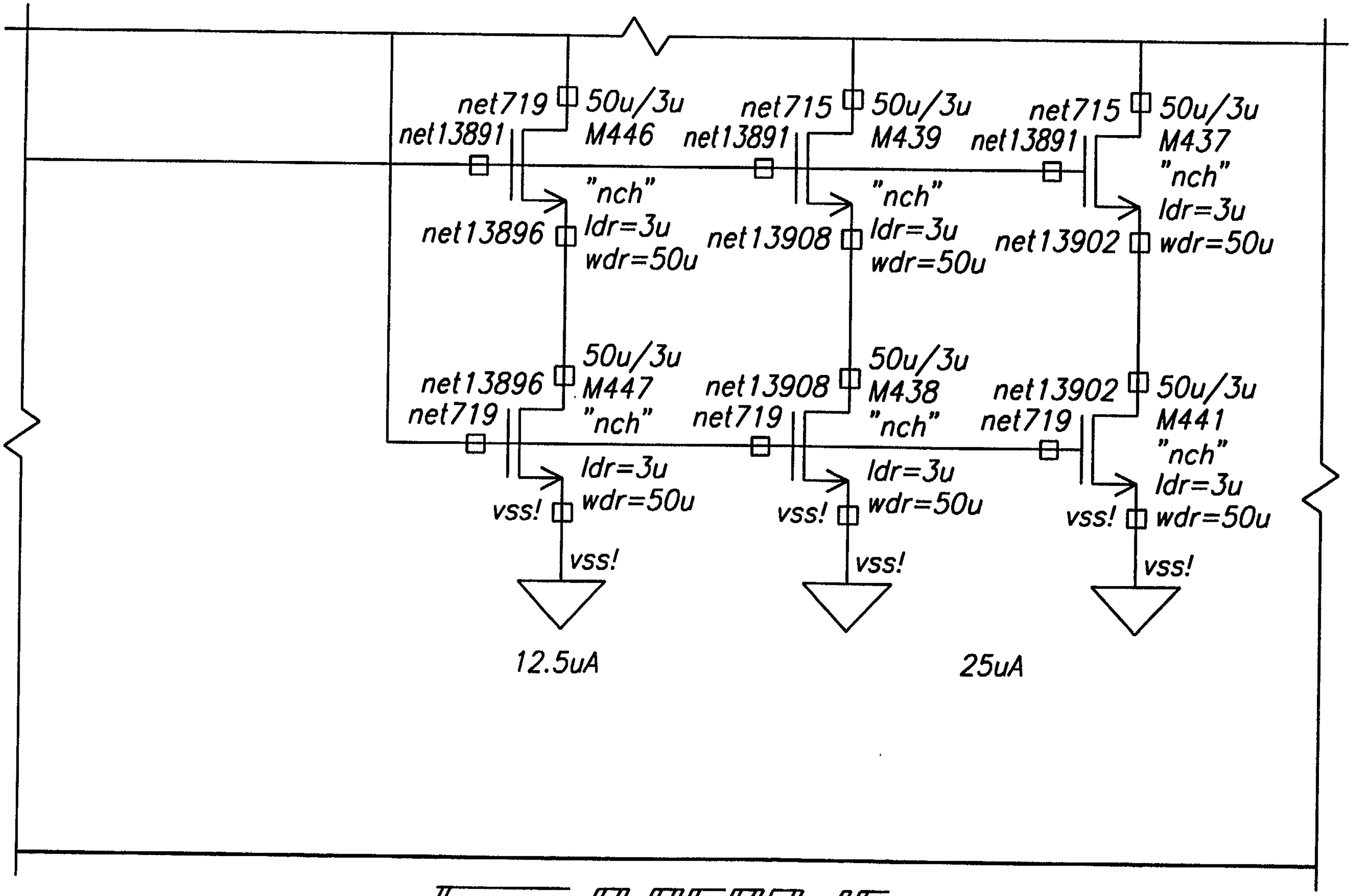

net719
net13891
50u/3u
M446
"nch"
net13896
ldr=3u
wdr=50u
net715
net13891
50u/3u
M439
"nch"
net13908
ldr=3u
wdr=50u
net715
net13891
50u/3u
M437
"nch"
ldr=3u
net13902
wdr=50u
net13896
net719
50u/3u
M447
"nch"
ldr=3u
vss!
wdr=50u
vss!
net13908
net719
50u/3u
M438
"nch"
ldr=3u
vss!
wdr=50u
vss!
net13902
net719
50u/3u
M441
"nch"
ldr=3u
vss!
wdr=50u
vss!
12.5uA
25uA

Fig 8.0607.AF

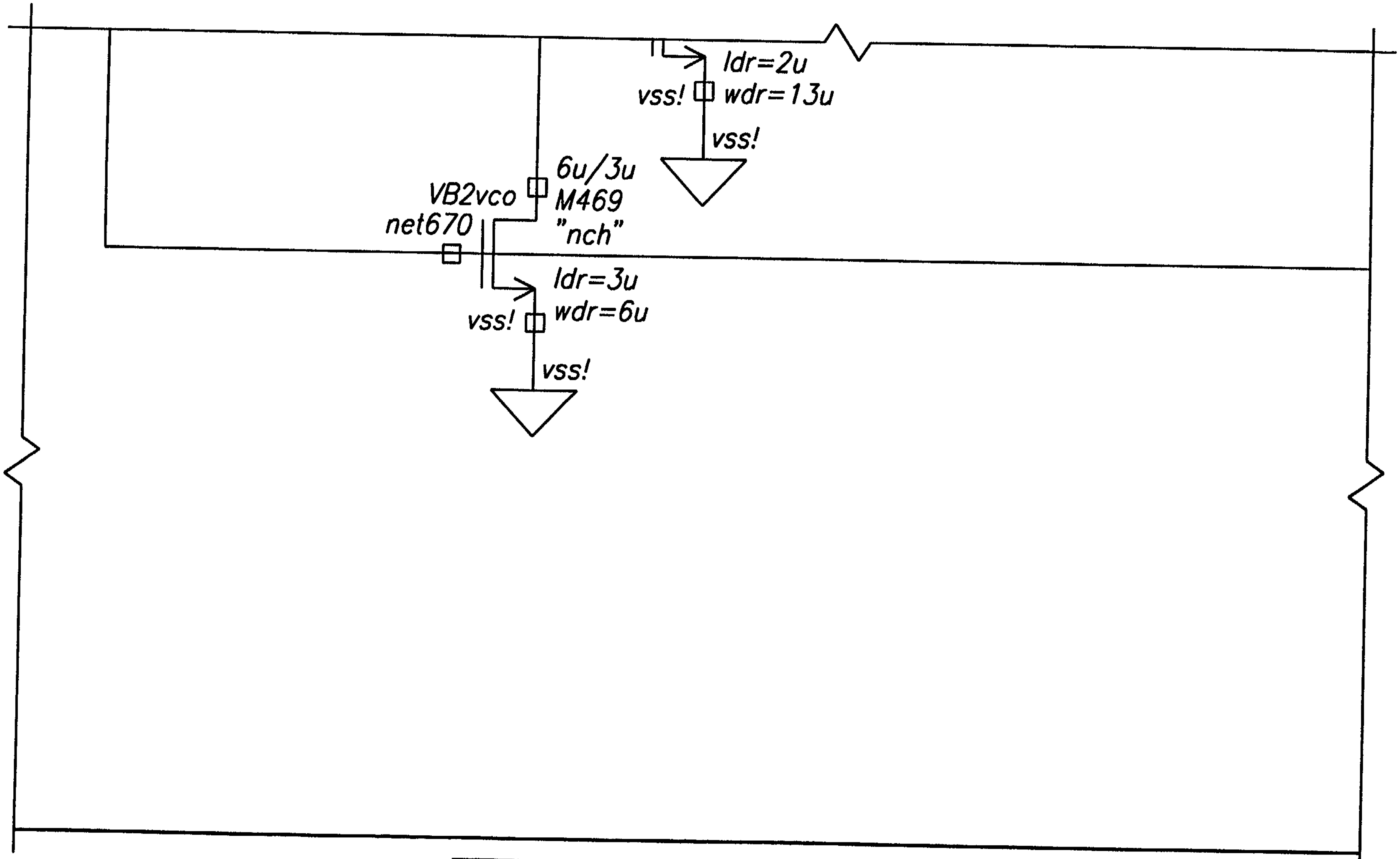

ldr=2u
vss!
wdr=13u
vss!
6u/3u
M469
"nch"
VB2vco
net670
ldr=3u
vss!
wdr=6u
vss!

Fig 8.060716

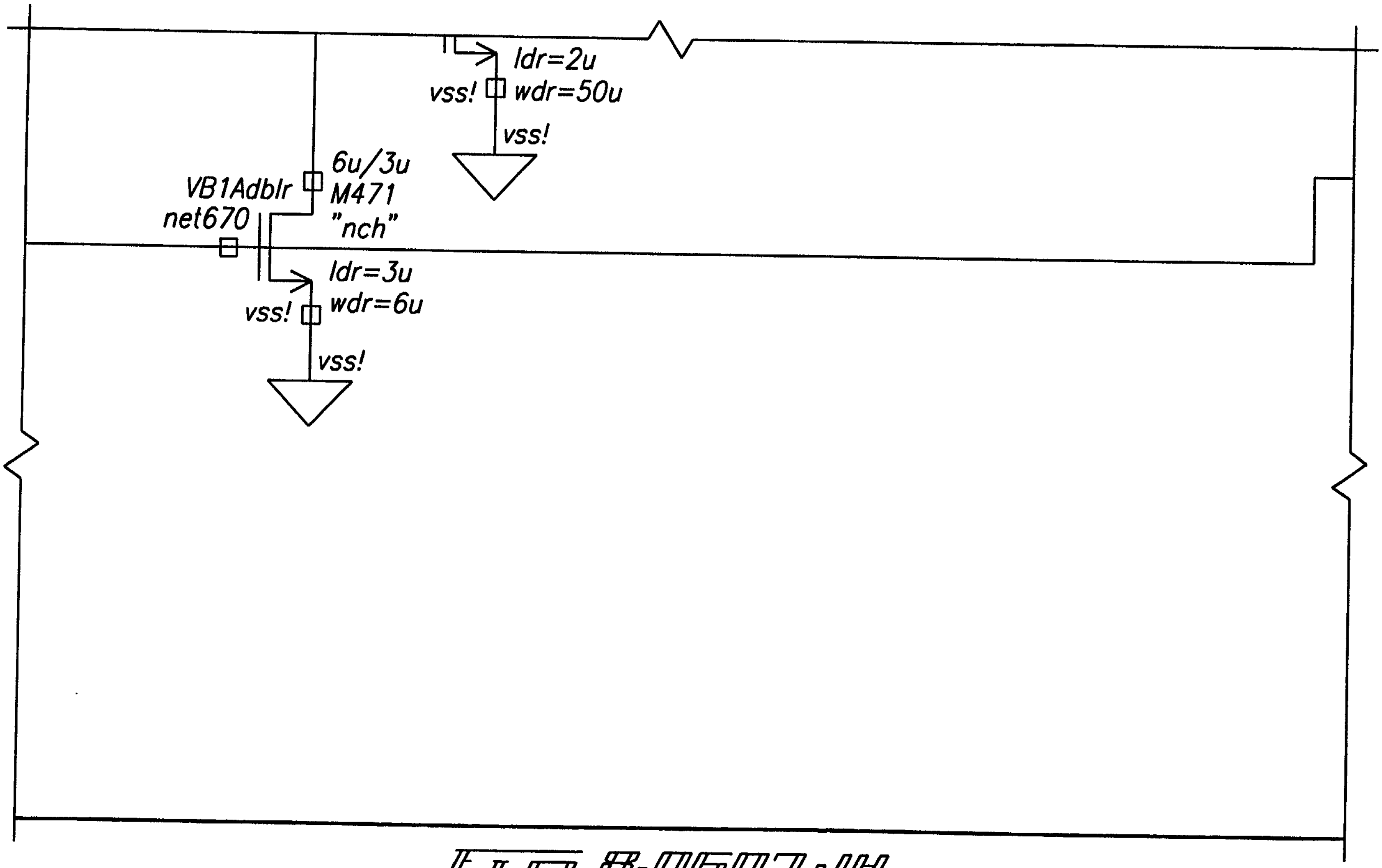

ldr=2u
vss!
wdr=50u
vss!
VB1Adblr
6u/3u
M471
"nch"
net670
ldr=3u
wdr=6u
vss!
vss!

Fig 8.0607.JH

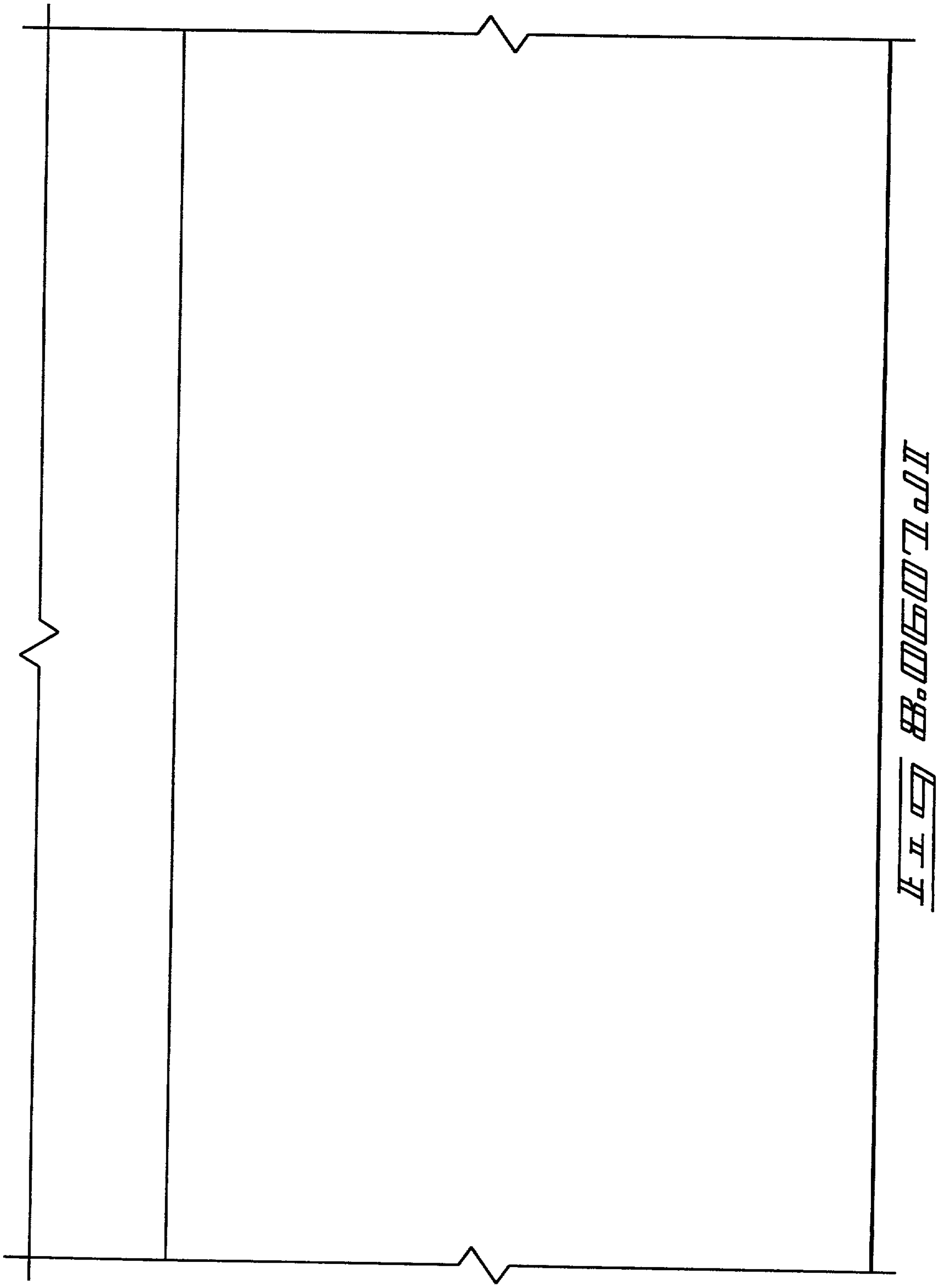


Fig 8.0607.11

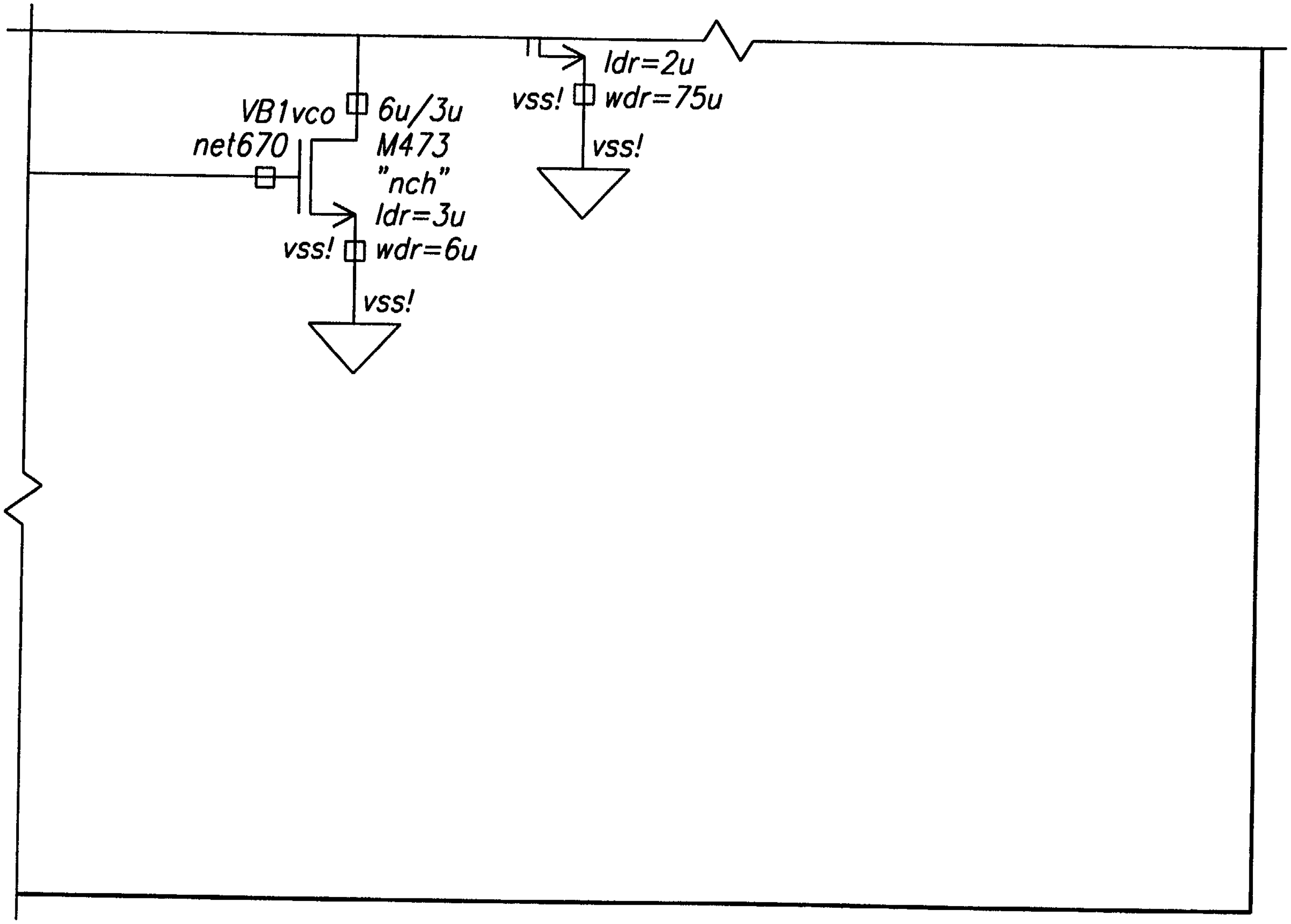

VB1vco
net670
6u/3u
M473
"nch"
ldr=3u
vss!
wdr=6u
vss!
ldr=2u
vss!
wdr=75u
vss!

Fig 8.0607dd

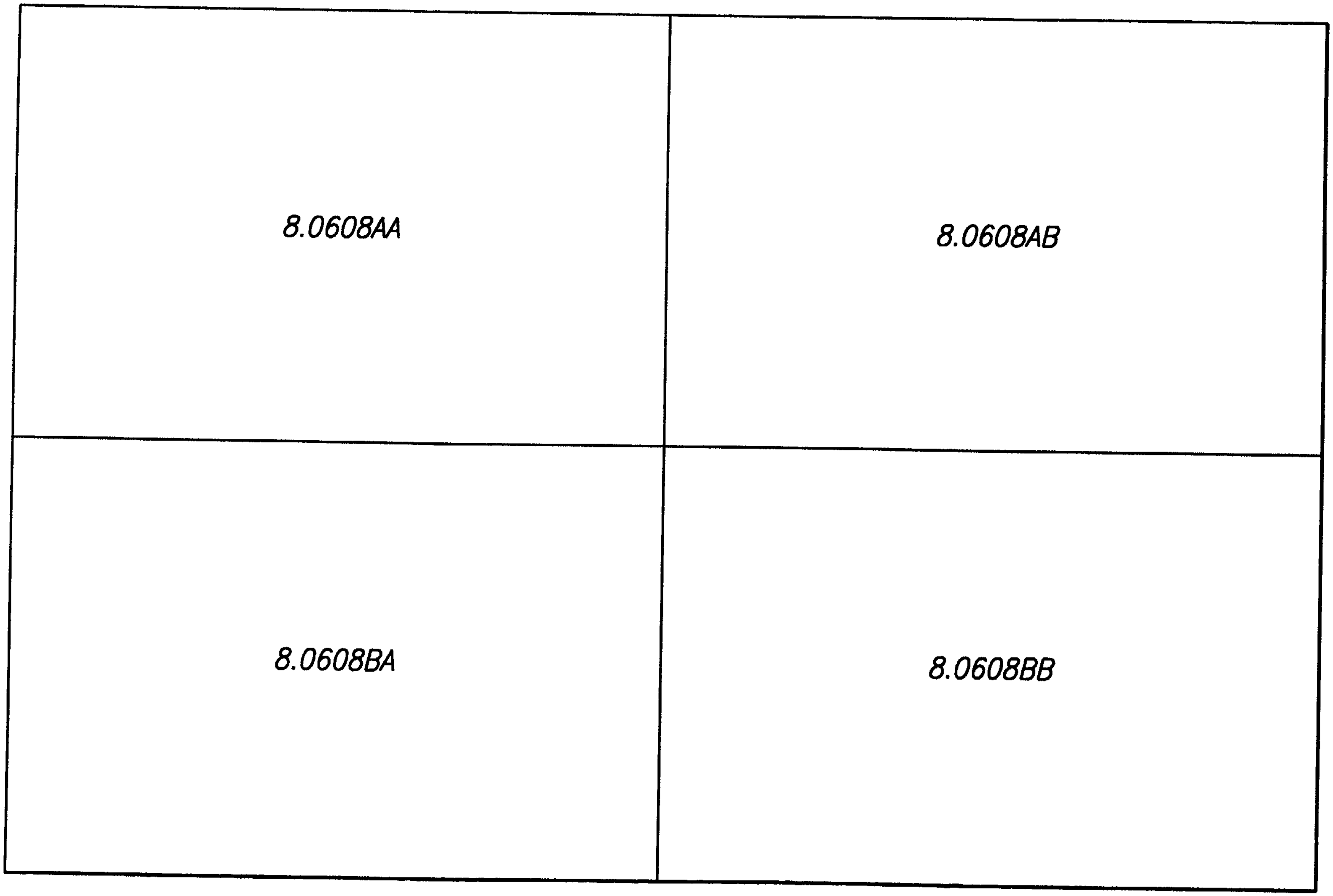


Fig 8.0608

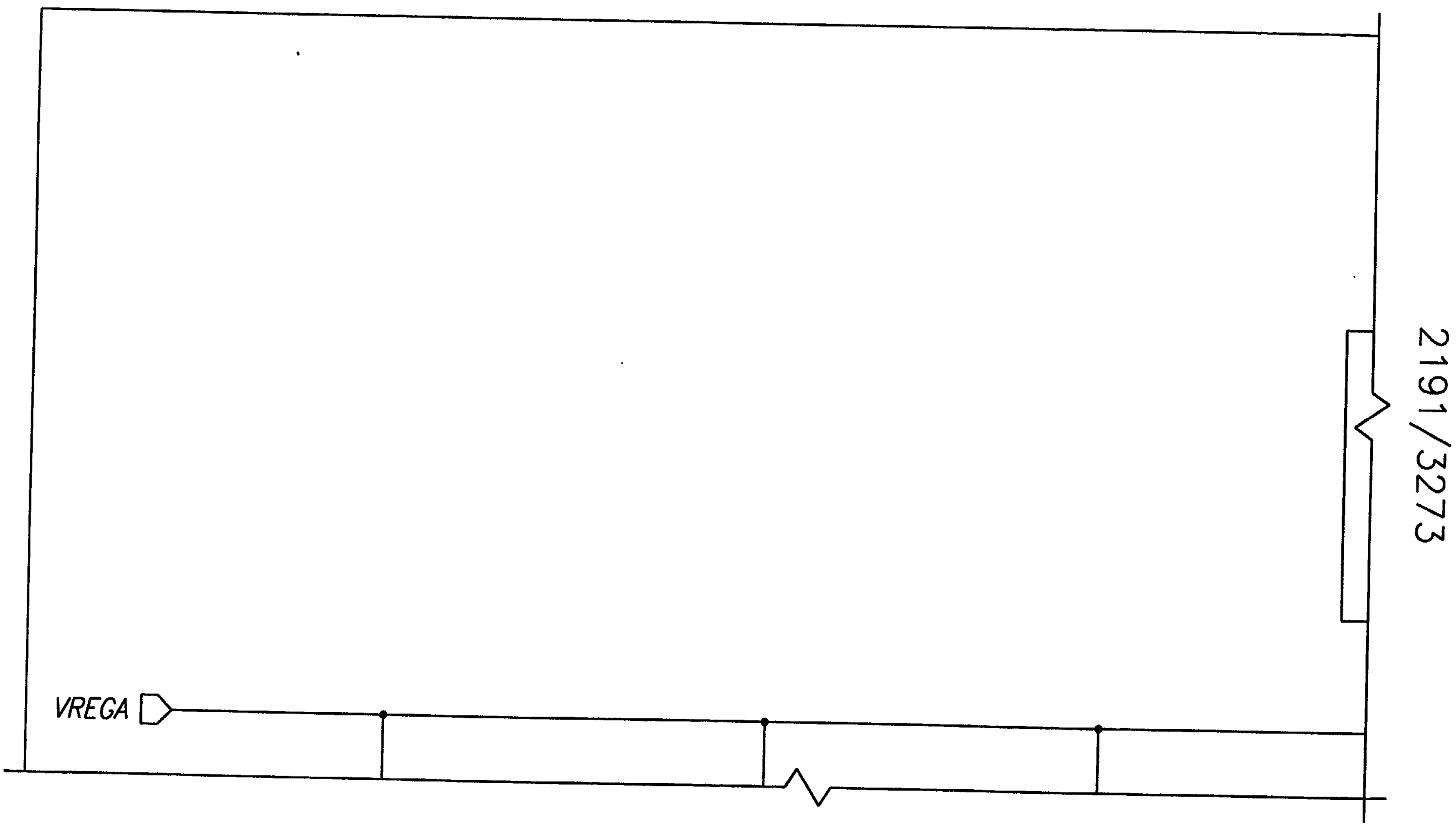


Fig 8.0608AA

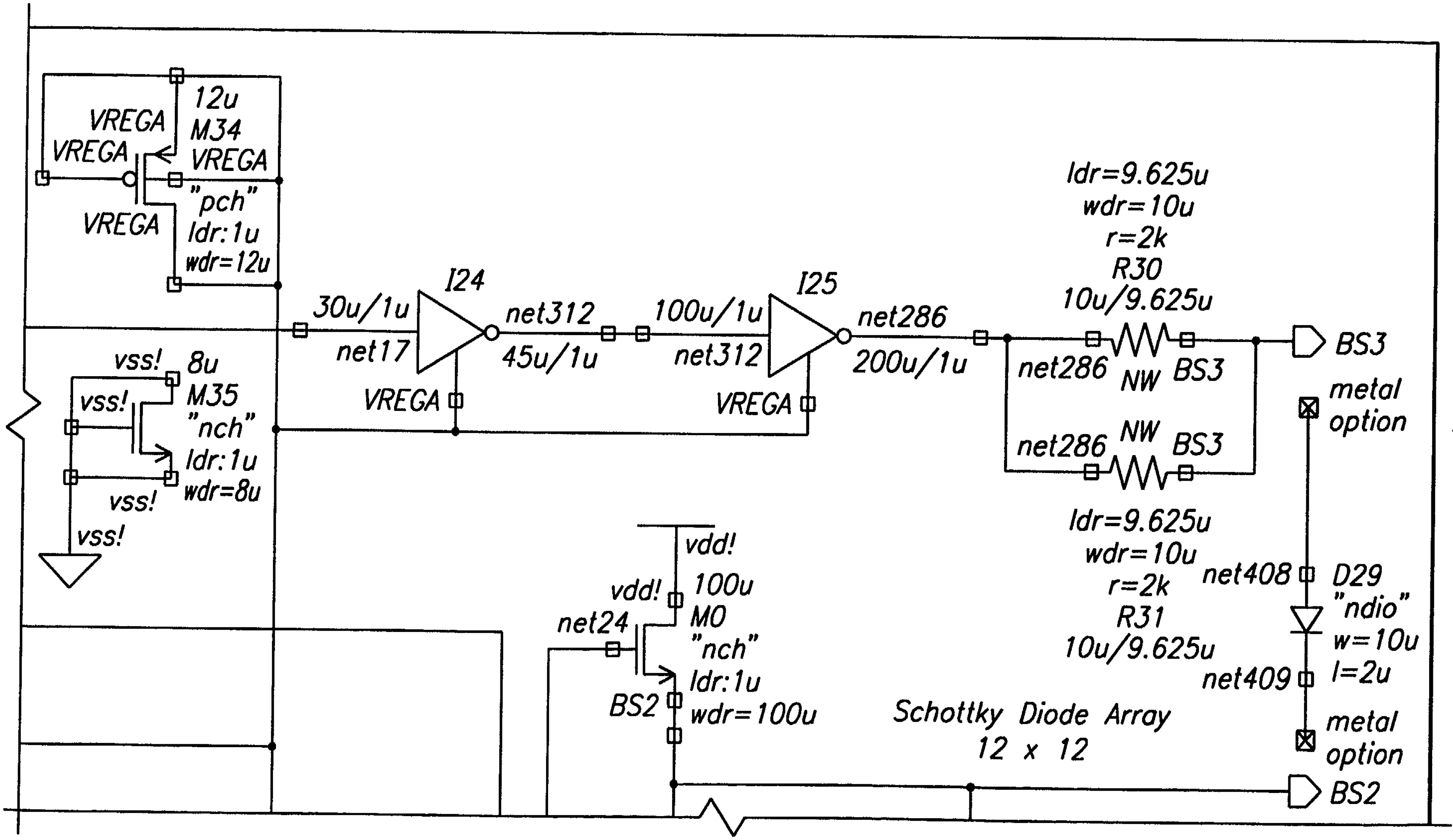

12u
M34
VREGA
VREGA
VREGA
"pch"
VREGA
ldr:1u
wdr=12u
vss!
8u
M35
vss!
"nch"
ldr:1u
vss!
wdr=8u
vss!
30u/1u
net17
I24
net312
45u/1u
VREGA
100u/1u
net312
I25
VREGA
net286
200u/1u
ldr=9.625u
wdr=10u
r=2k
R30
10u/9.625u
net286
NW
BS3
net286
NW
BS3
ldr=9.625u
wdr=10u
r=2k
R31
10u/9.625u
BS3
metal
option
net408
D29
"ndio"
w=10u
net409
l=2u
metal
option
BS2
vdd!
vdd!
100u
M0
net24
"nch"
ldr:1u
BS2
wdr=100u
Schottky Diode Array
12 x 12

Fig 8.0608AB

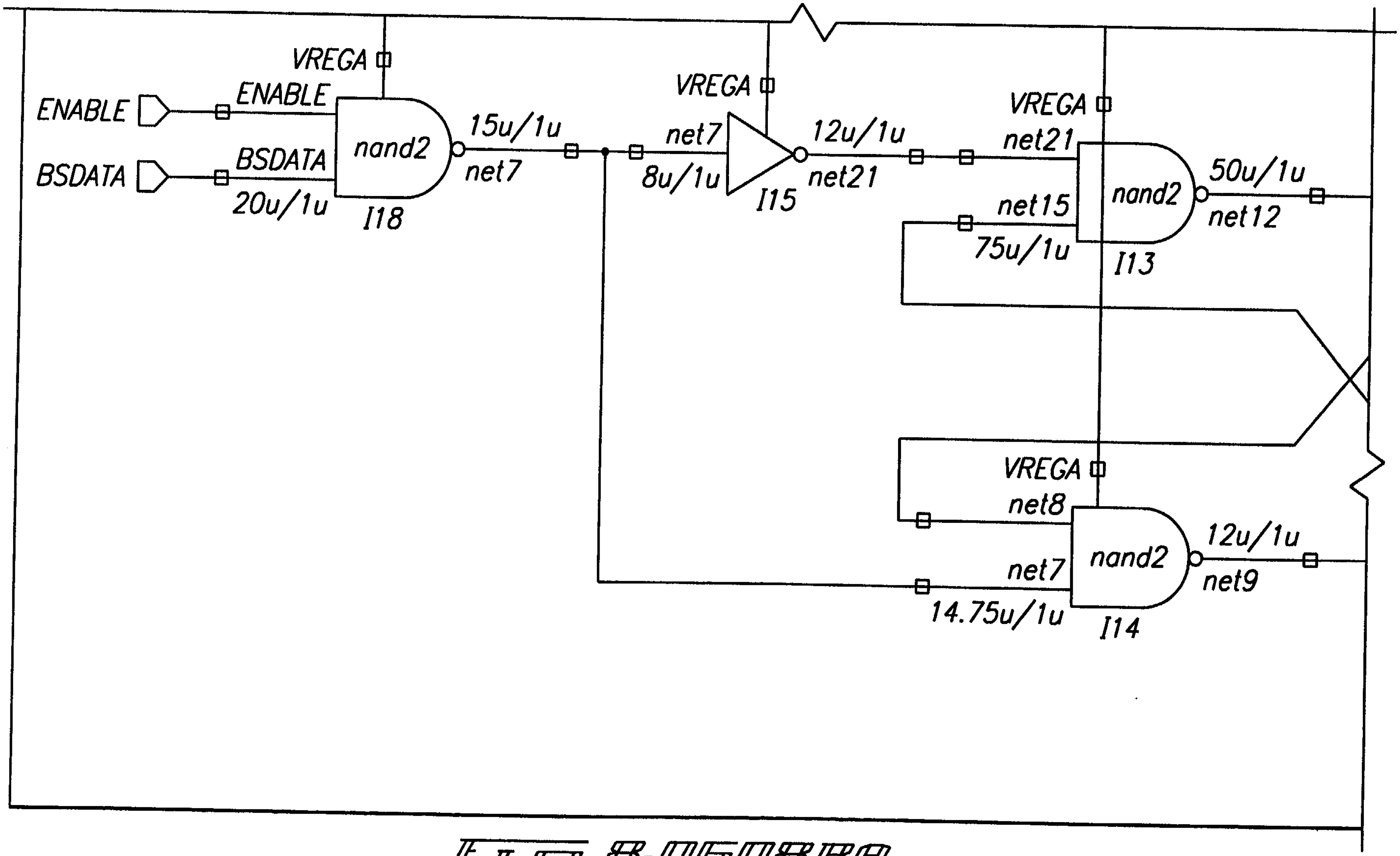


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Fig 8.0608BA

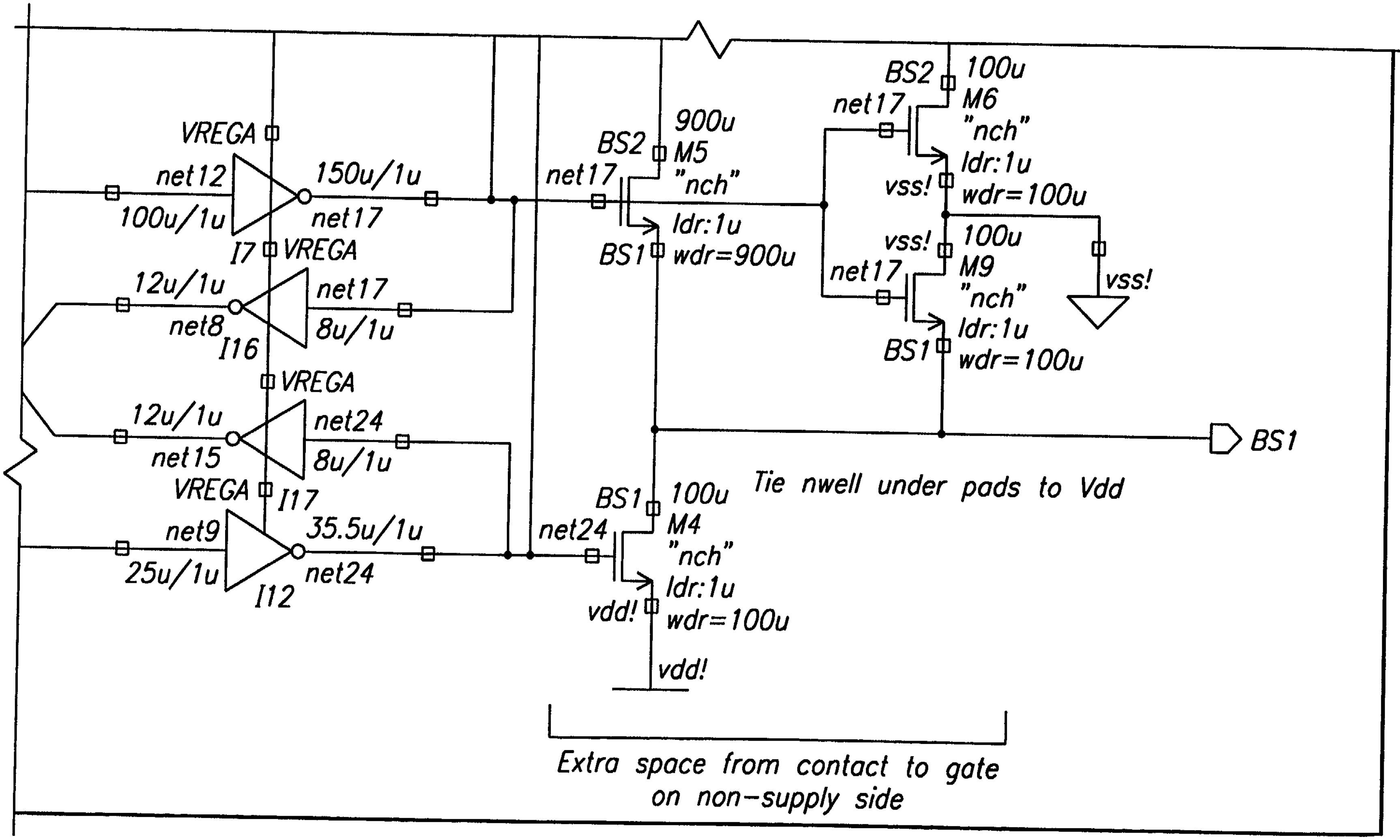

VREGA
net12
100u/1u
150u/1u
net17
I7
VREGA
12u/1u
net8
I16
net17
8u/1u
VREGA
12u/1u
net15
net24
8u/1u
VREGA
I17
net9
25u/1u
35.5u/1u
net24
I12
BS2
900u
M5
"nch"
net17
ldr:1u
BS1
wdr=900u
BS2
100u
M6
"nch"
net17
ldr:1u
vss!
wdr=100u
vss!
100u
M9
"nch"
net17
ldr:1u
BS1
wdr=100u
vss!
BS1
Tie nwell under pads to Vdd
BS1
100u
M4
"nch"
net24
ldr:1u
vdd!
wdr=100u
vdd!
Extra space from contact to gate
on non-supply side

Fig 8.0608BB

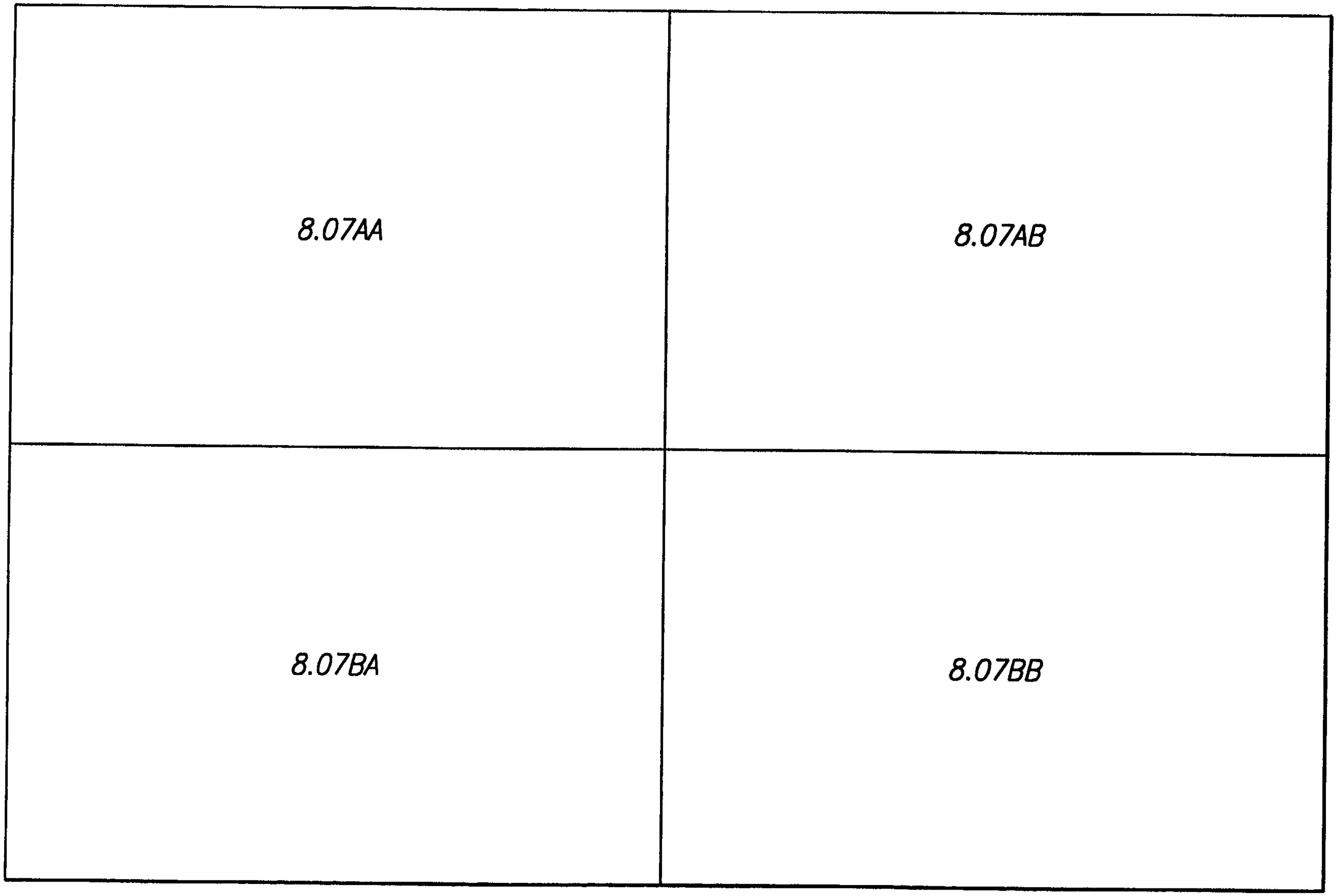


Fig 8.07

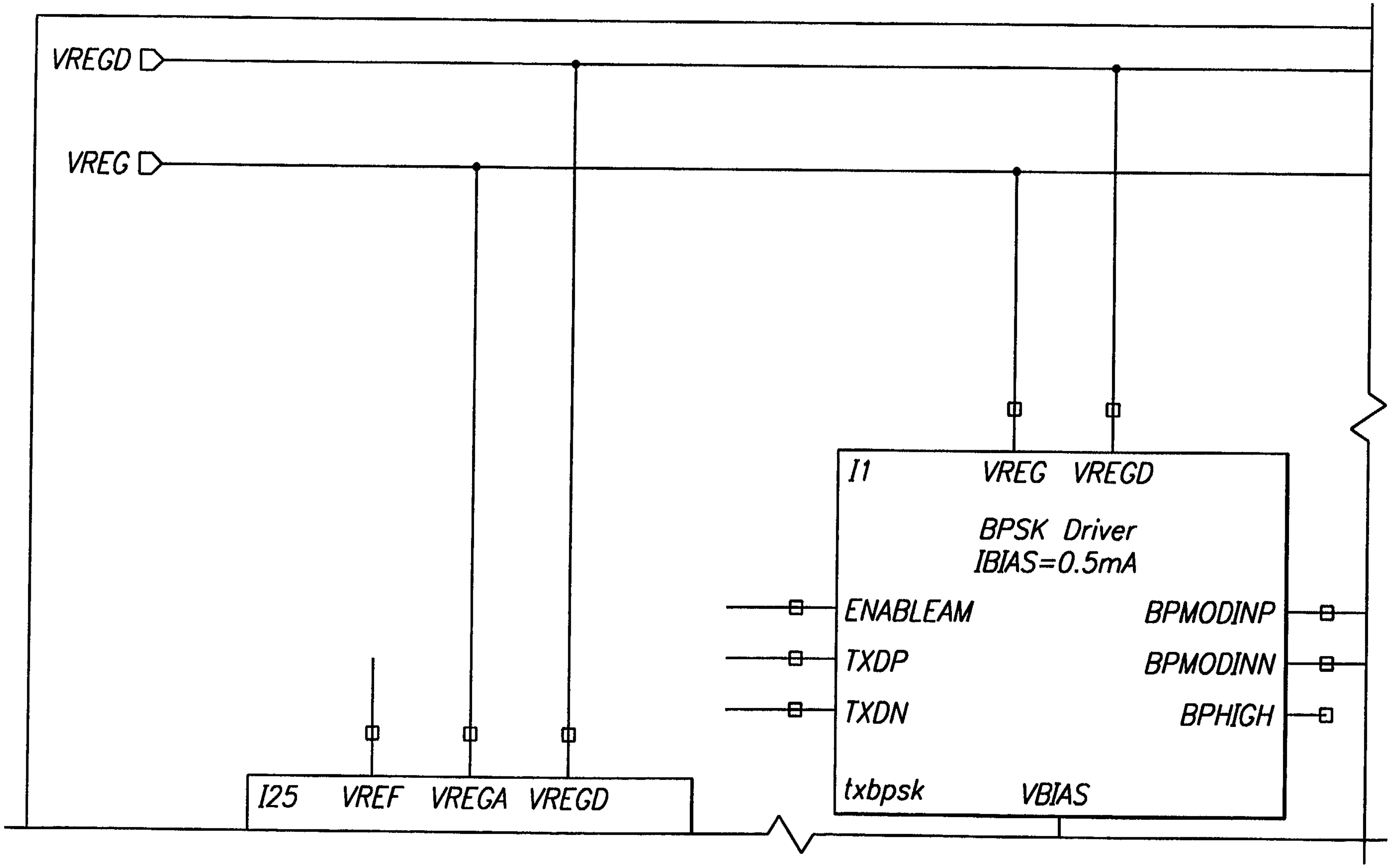

VREGD
VREG
I1
VREG
VREGD
BPSK Driver
IBIAS=0.5mA
ENABLEAM
TXDP
TXDN
txbpsk
VBIAS
BPMODINP
BPMODINN
BPHIGH
I25
VREF
VREGA
VREGD

Fig 8.07AA

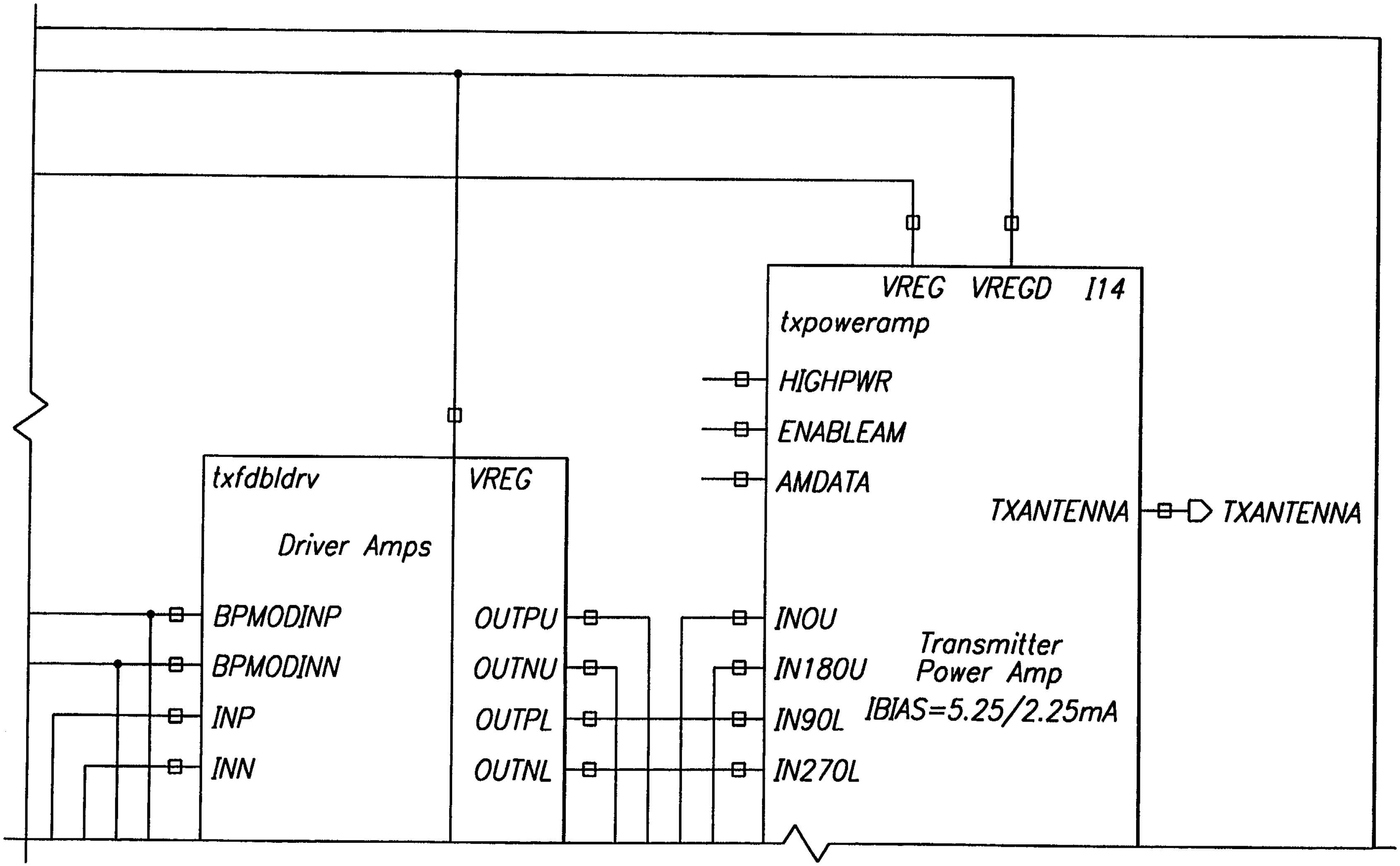

txfdbldrv
Driver Amps
VREG
BPMODINP
BPMODINN
INP
INN
OUTPU
OUTNU
OUTPL
OUTNL
VREG
VREGD
I14
txpoweramp
HIGHPWR
ENABLEAM
AMDATA
TXANTENNA
TXANTENNA
INOU
IN180U
IN90L
IN270L
Transmitter
Power Amp
IBIAS=5.25/2.25mA

Fig 8.07AB

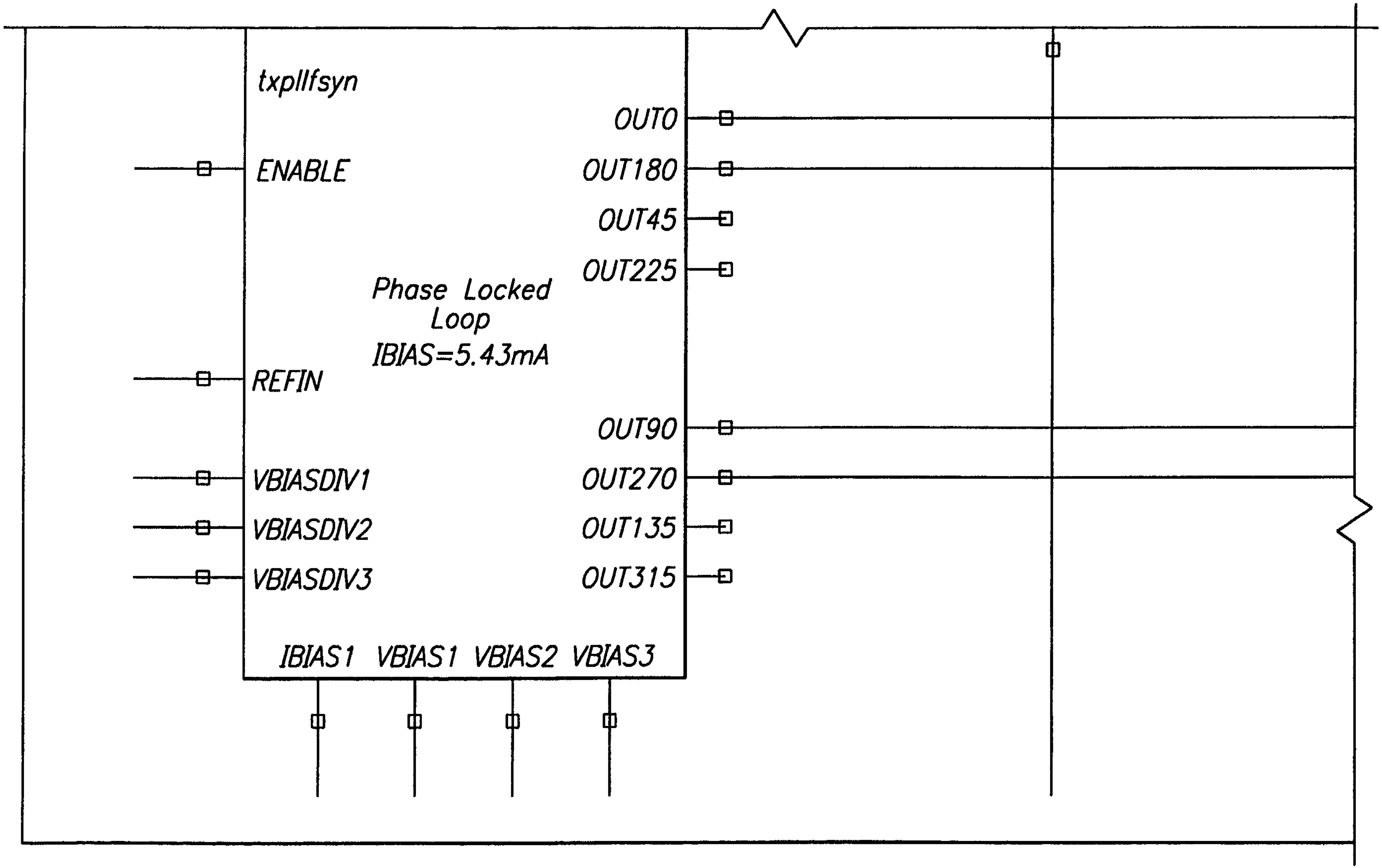

txpllfsyn
ENABLE
REFIN
VBIASDIV1
VBIASDIV2
VBIASDIV3
Phase Locked
Loop
IBIAS=5.43mA
OUT0
OUT180
OUT45
OUT225
OUT90
OUT270
OUT135
OUT315
IBIAS1
VBIAS1
VBIAS2
VBIAS3

Fig 8.07BA

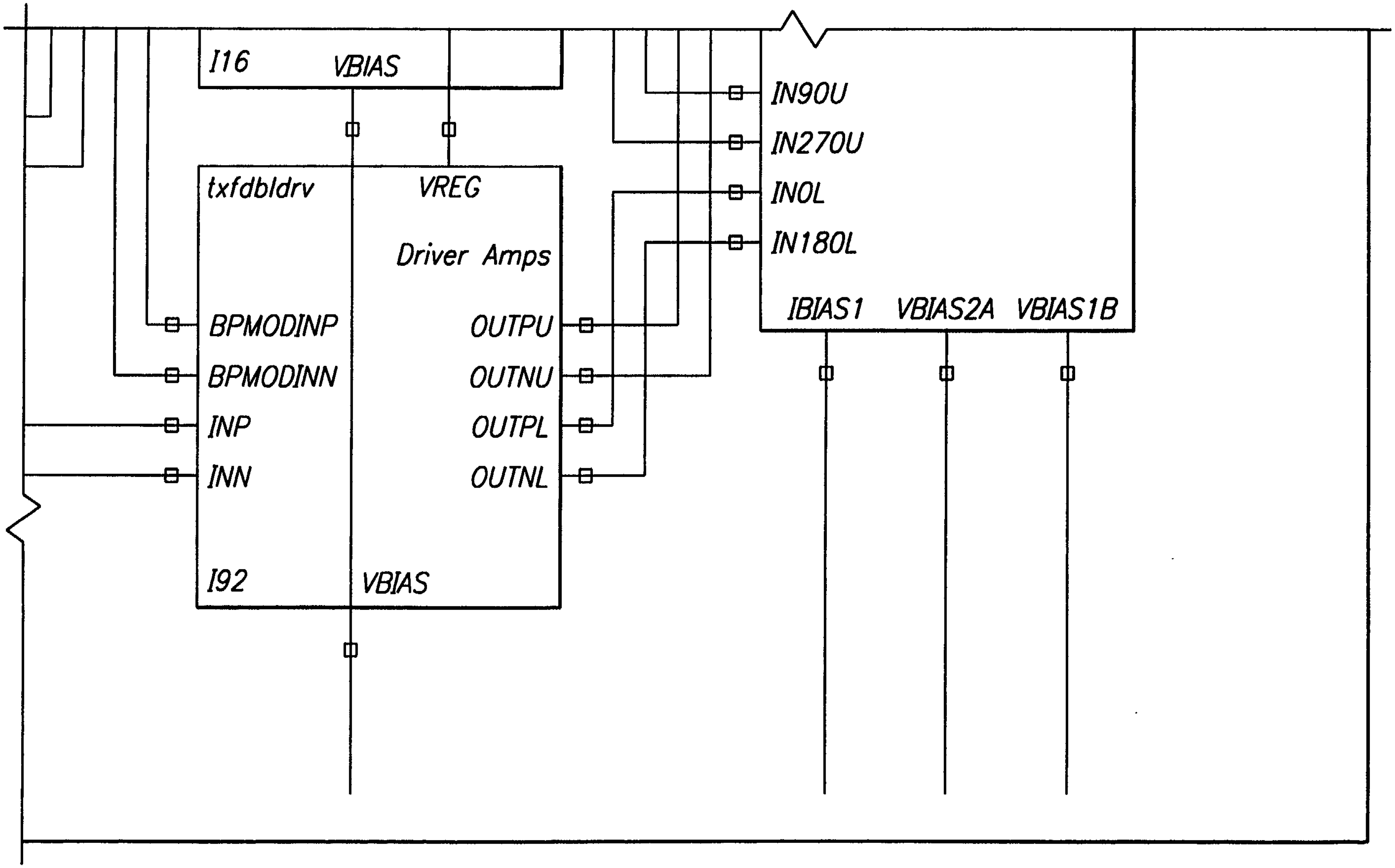

I16
VBIAS
txfdbldrv
VREG
Driver Amps
BPMODINP
BPMODINN
INP
INN
I92
VBIAS
OUTPU
OUTNU
OUTPL
OUTNL
IN90U
IN270U
IN0L
IN180L
IBIAS1
VBIAS2A
VBIAS1B

Fig 8.07BB

8.0701AA	8.0701AB
8.0701BA	8.0701BB
8.0701CA	8.0701CB

Fig 8.0701

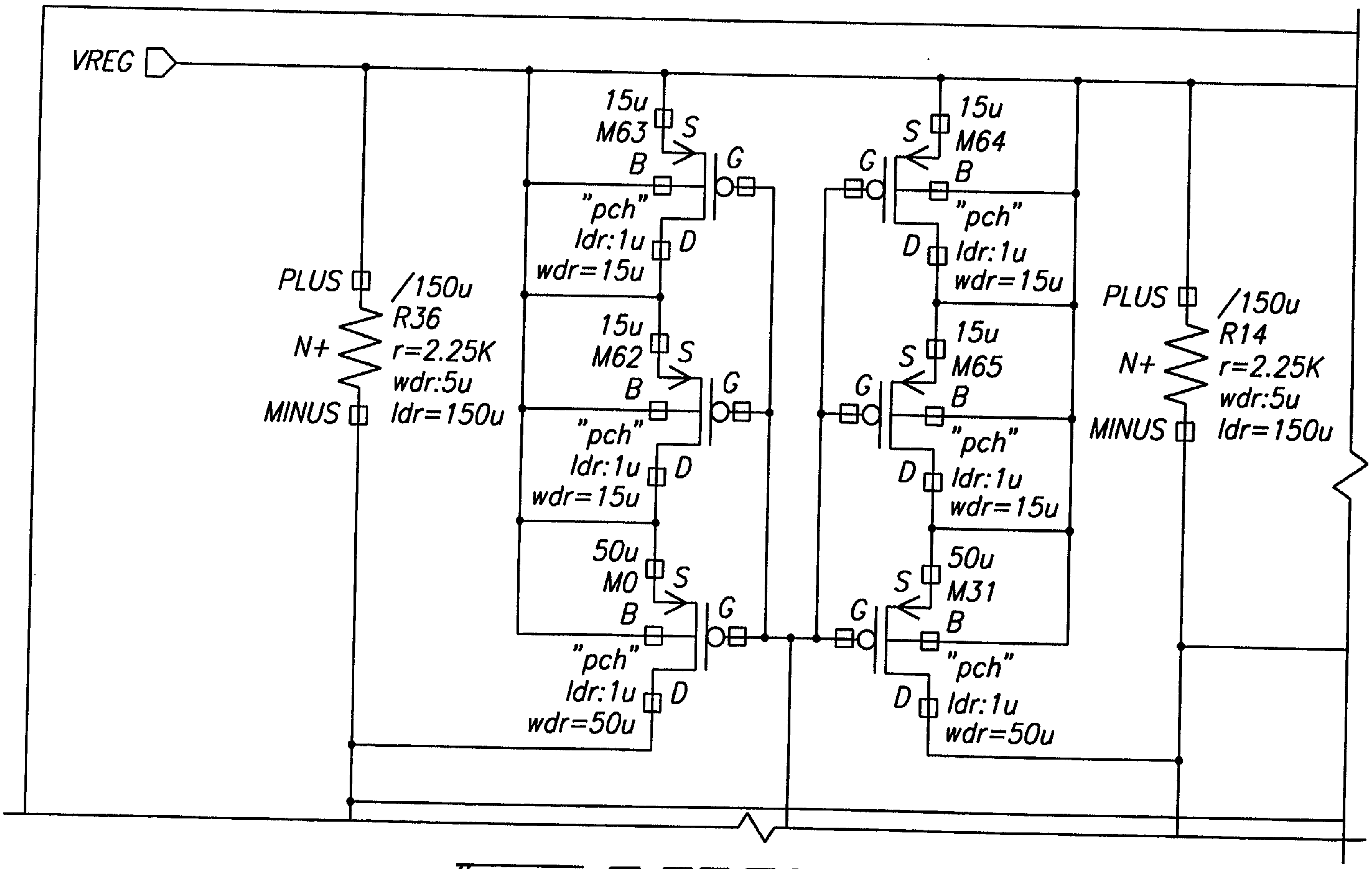
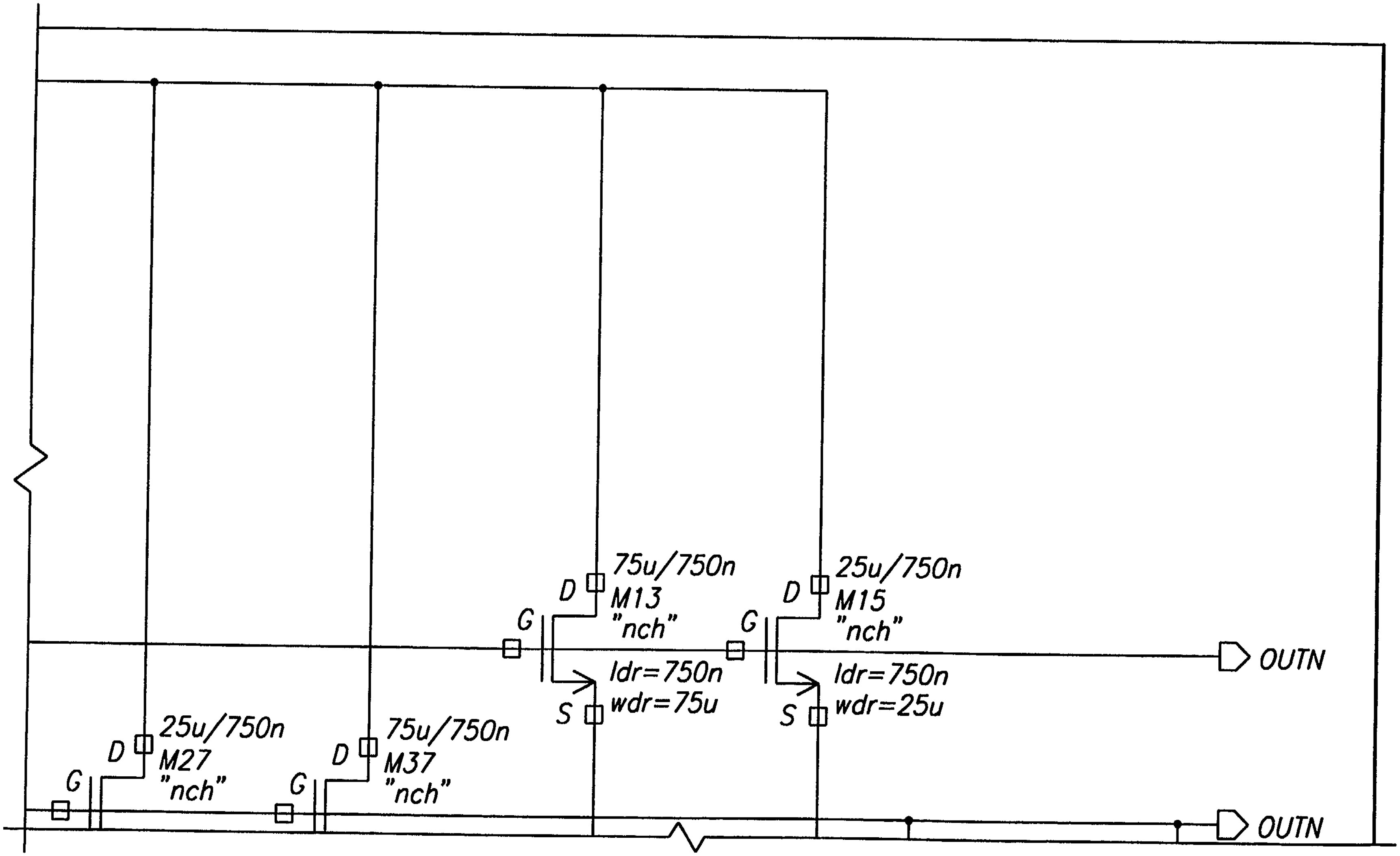

VREG
PLUS
/150u
R36
N+
r=2.25K
wdr:5u
MINUS
ldr=150u
15u
M63
S
G
B
"pch"
ldr:1u
D
wdr=15u
15u
M62
S
G
B
"pch"
ldr:1u
D
wdr=15u
50u
M0
S
G
B
"pch"
ldr:1u
D
wdr=50u
15u
M64
S
G
B
"pch"
D
ldr:1u
wdr=15u
15u
M65
S
G
B
"pch"
D
ldr:1u
wdr=15u
50u
M31
S
G
B
"pch"
D
ldr:1u
wdr=50u
PLUS
/150u
R14
N+
r=2.25K
wdr:5u
MINUS
ldr=150u

Fig 8.0101AA



G
D
25u/750n
M27
"nch"
G
D
75u/750n
M37
"nch"
G
D
75u/750n
M13
"nch"
S
ldr=750n
wdr=75u
G
D
25u/750n
M15
"nch"
S
ldr=750n
wdr=25u
OUTN
OUTN

Fig 8.0101AB

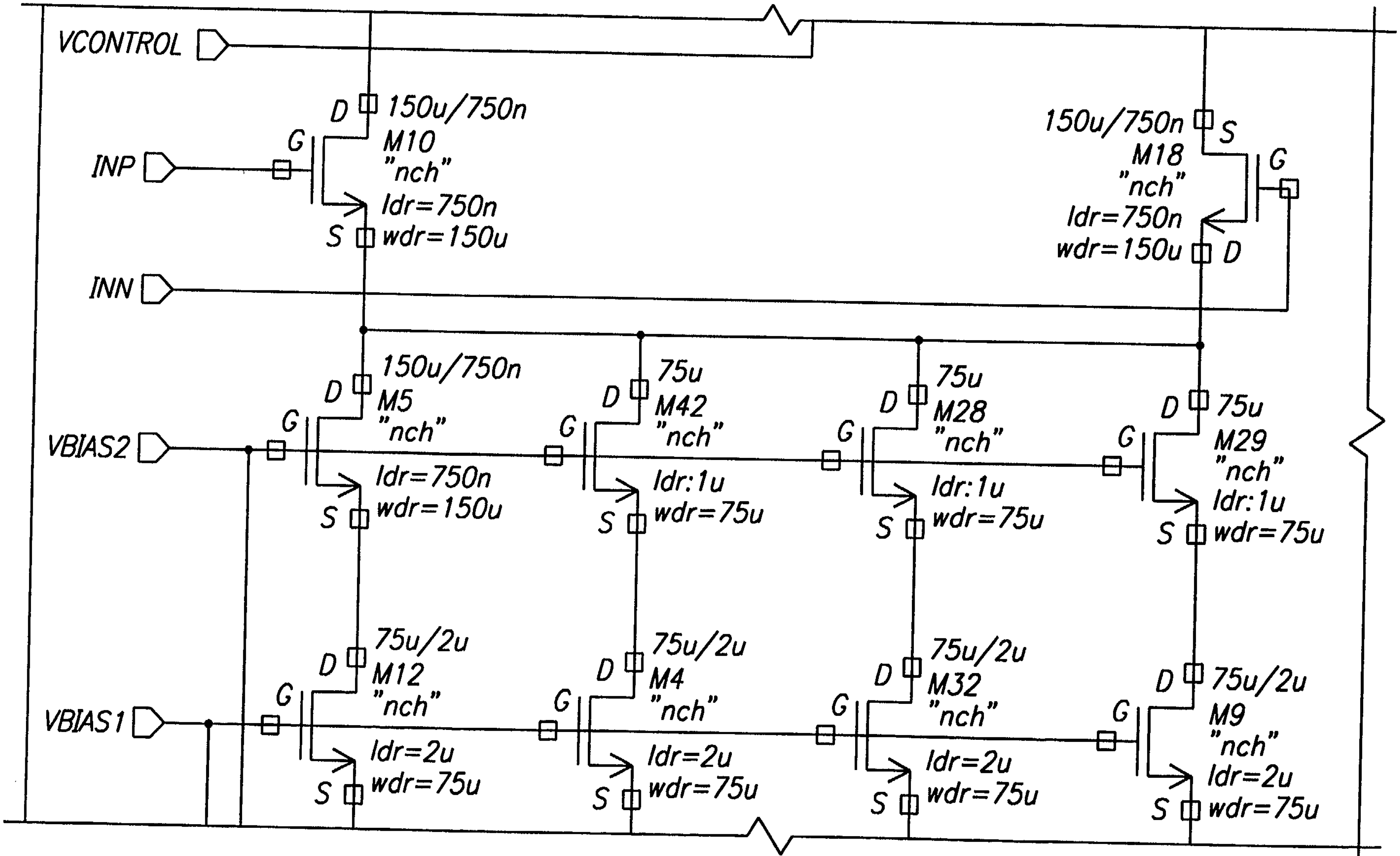


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Fig 8.DETAIL

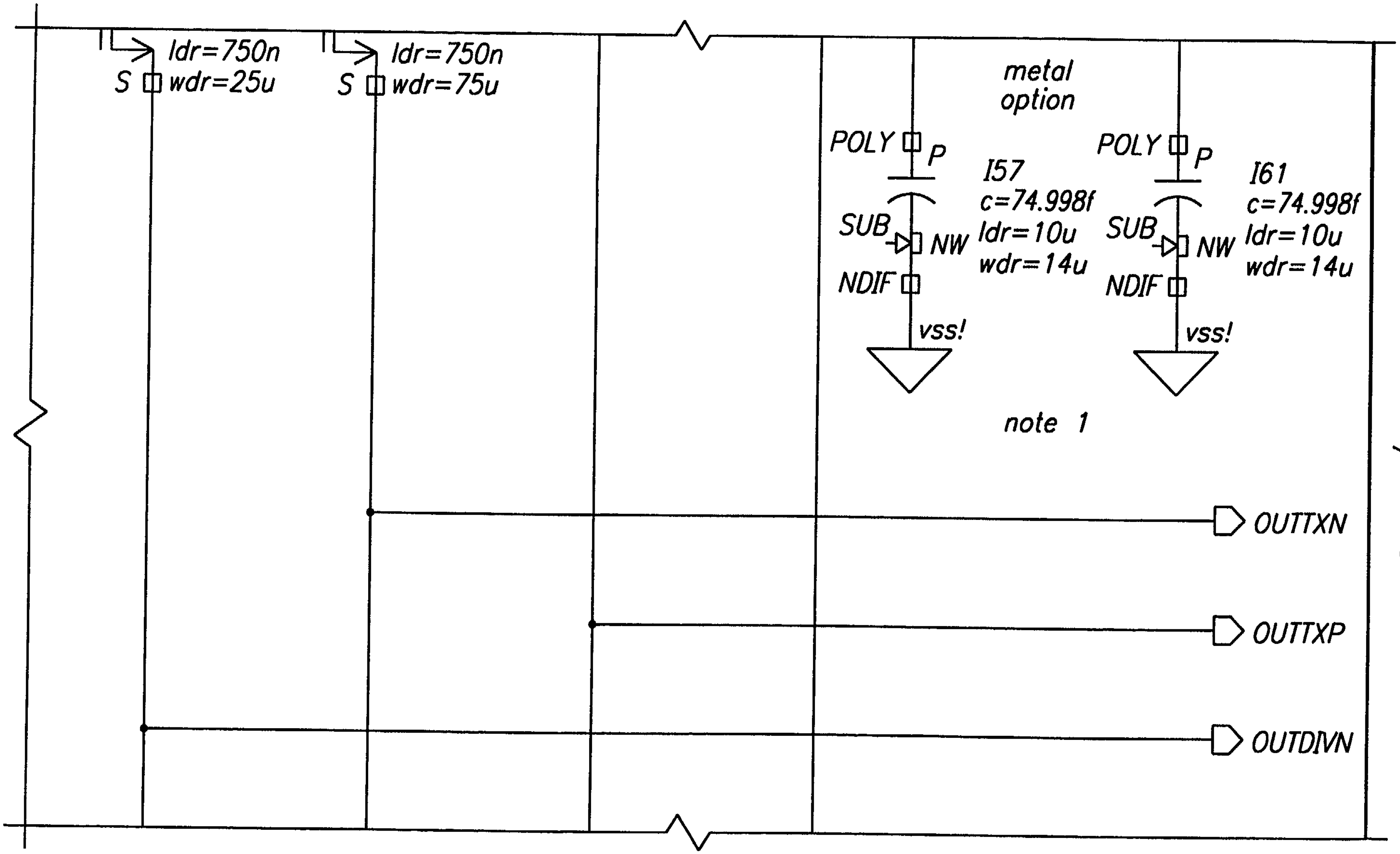
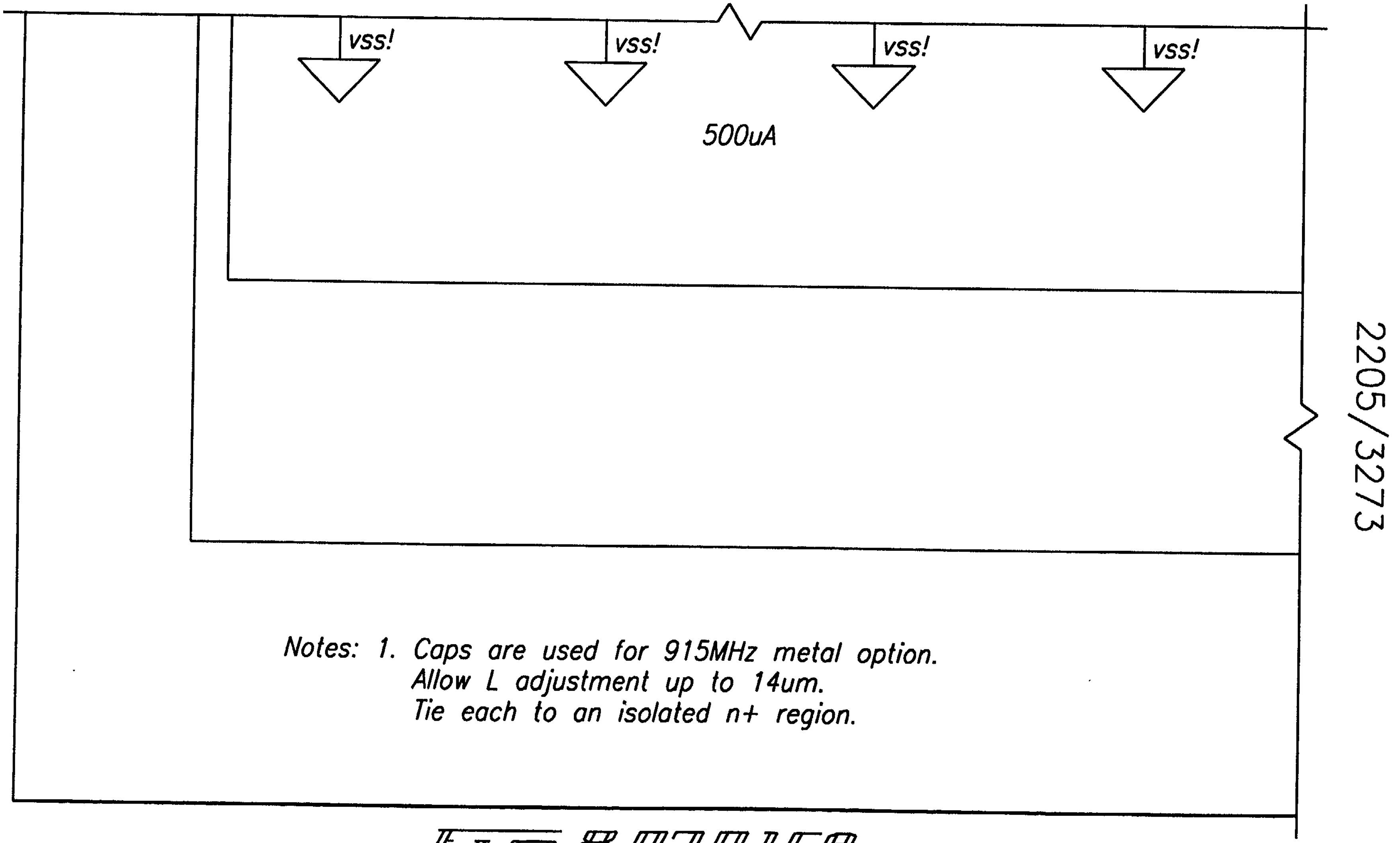

ldr=750n
S wdr=25u
ldr=750n
S wdr=75u
metal
option
POLY
P
I57
c=74.998f
SUB
NW
ldr=10u
wdr=14u
NDIF
vss!
POLY
P
I61
c=74.998f
SUB
NW
ldr=10u
wdr=14u
NDIF
vss!
note 1
OUTTXN
OUTTXP
OUTDIVN

Fig 8.0701BB



Notes: 1. Caps are used for 915MHz metal option.
Allow L adjustment up to 14um.
Tie each to an isolated n+ region.

Fig 8.0701CA

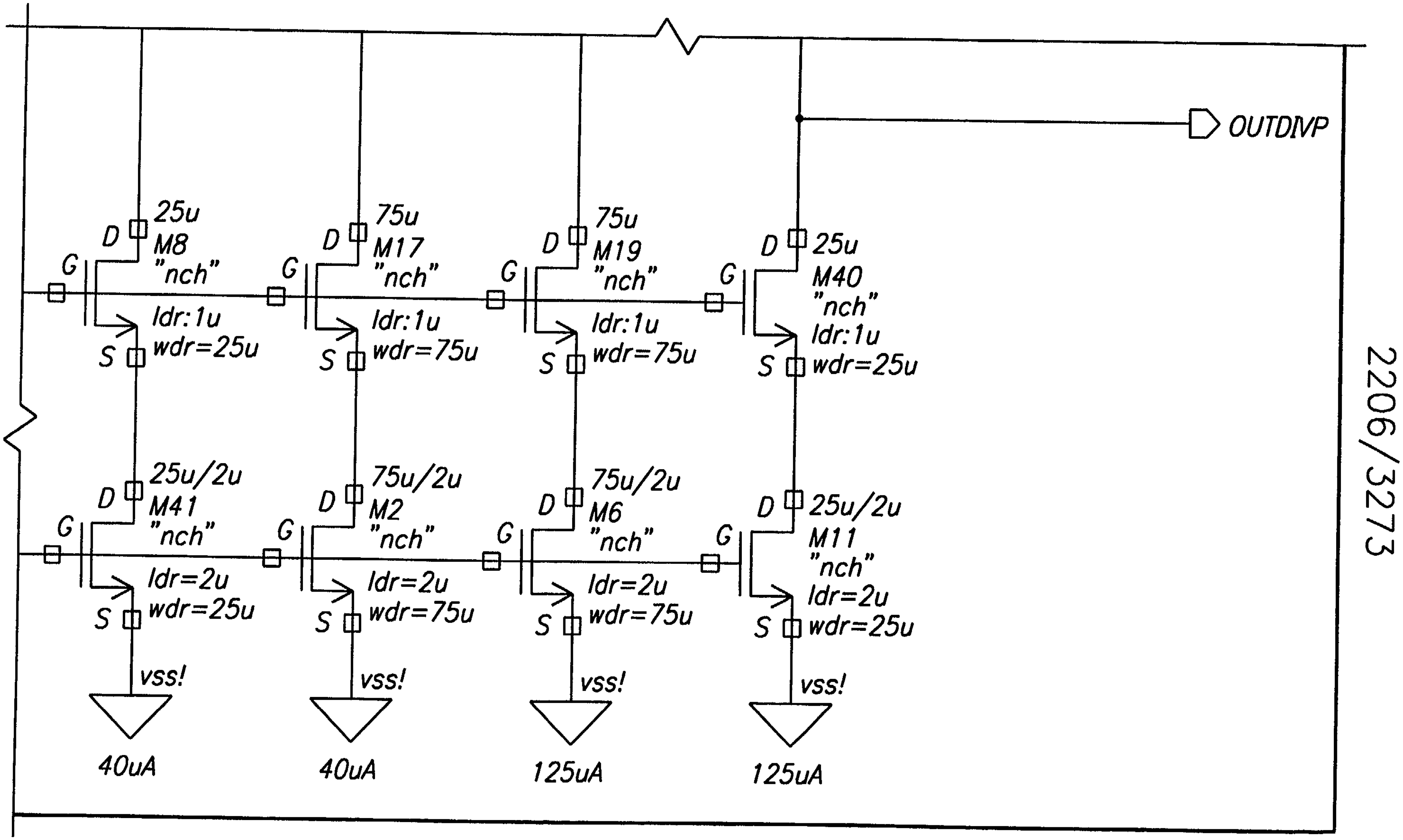

OUTDIVP
25u
M8
"nch"
ldr:1u
wdr=25u
75u
M17
"nch"
ldr:1u
wdr=75u
75u
M19
"nch"
ldr:1u
wdr=75u
25u
M40
"nch"
ldr:1u
wdr=25u
25u/2u
M41
"nch"
ldr=2u
wdr=25u
75u/2u
M2
"nch"
ldr=2u
wdr=75u
75u/2u
M6
"nch"
ldr=2u
wdr=75u
25u/2u
M11
"nch"
ldr=2u
wdr=25u
D
G
S
vss!
40uA
40uA
125uA
125uA

Fig 8.0701CB

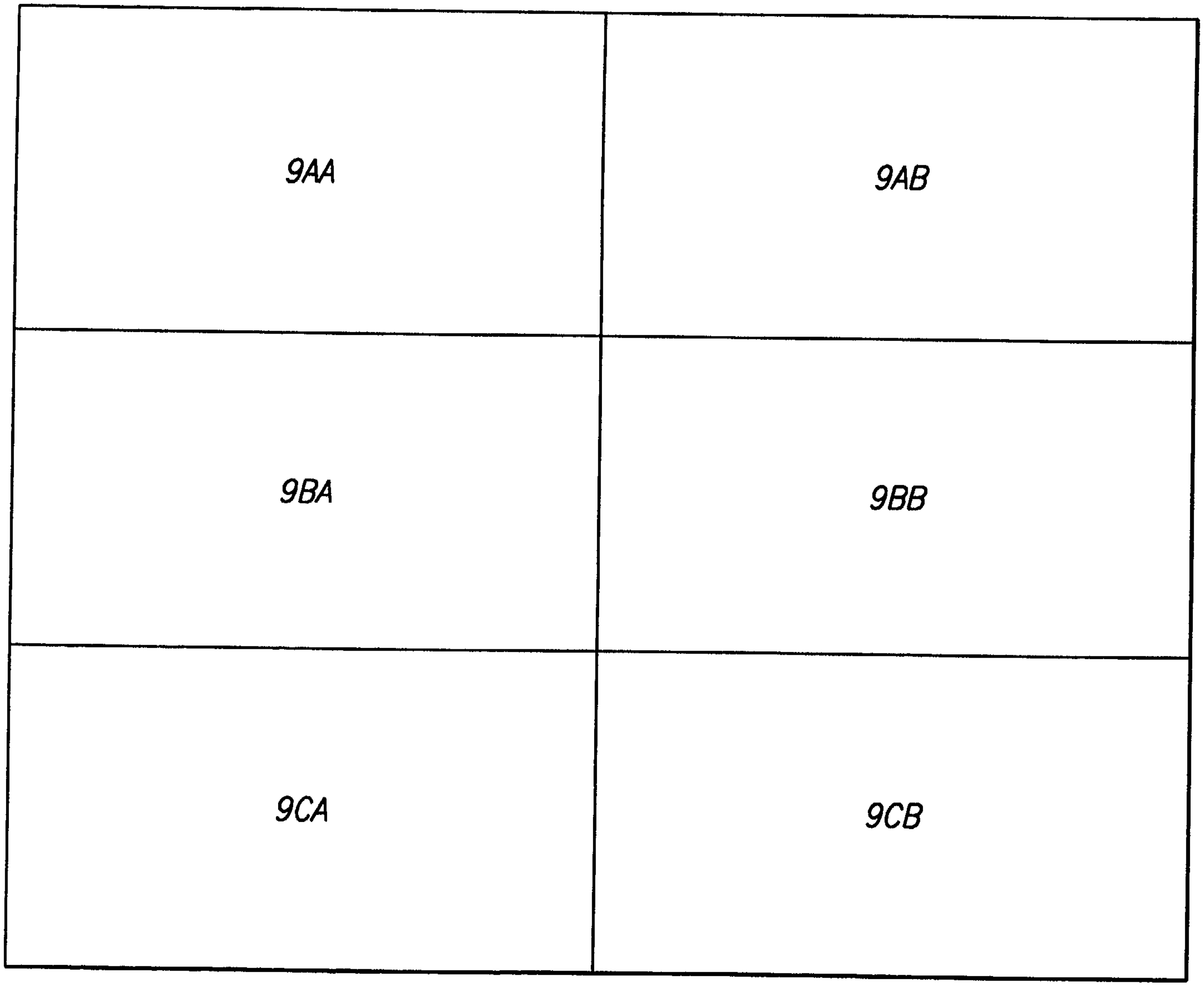


Fig 9

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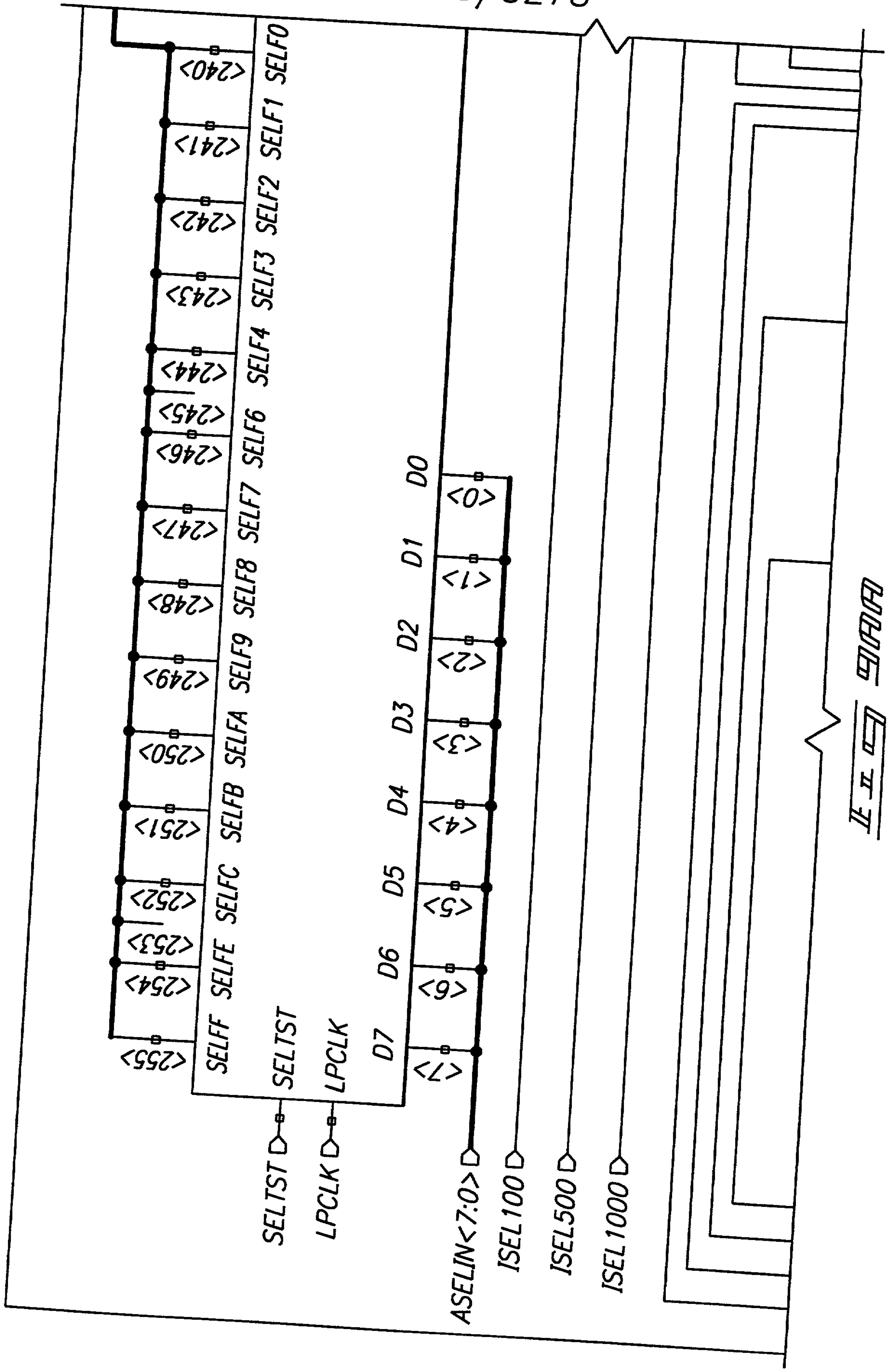

SELF0
SELF1
SELF2
SELF3
SELF4
SELF6
SELF7
SELF8
SELF9
SELFA
SELFB
SELFC
SELFE
SELFF
SELTST
LPCLK
D0
D1
D2
D3
D4
D5
D6
D7
<240>
<241>
<242>
<243>
<244>
<245>
<246>
<247>
<248>
<249>
<250>
<251>
<252>
<253>
<254>
<255>
<0>
<1>
<2>
<3>
<4>
<5>
<6>
<7>
SELTST
LPCLK
ASELIN<7:0>
ISEL100
ISEL500
ISEL1000

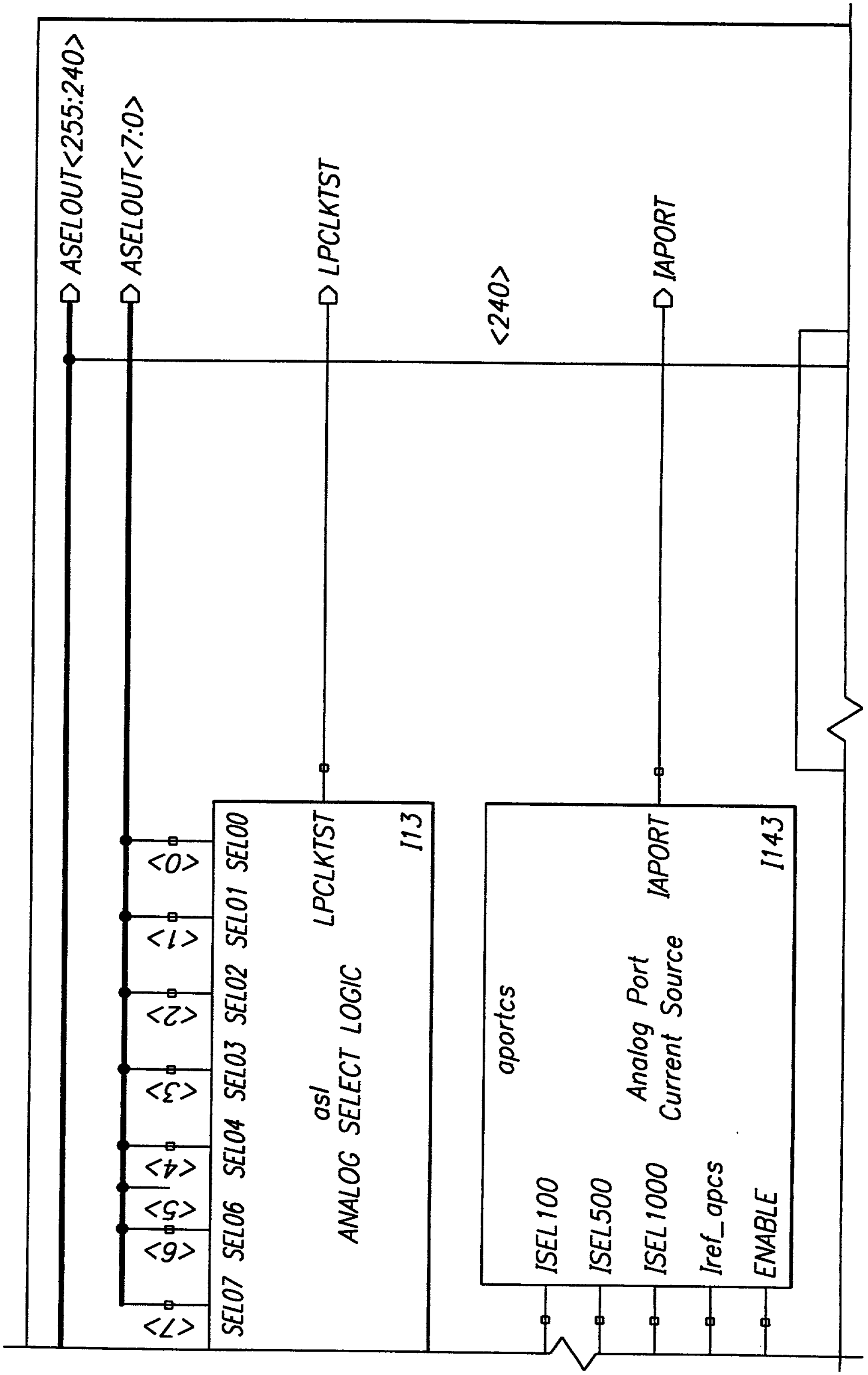

ASELOUT<255:240>
ASELOUT<7:0>
LPCLKTST
<240>
IAPORT
<0>
<1>
<2>
<3>
<4>
<5>
<6>
<7>
SEL00
SEL01
SEL02
SEL03
SEL04
SEL06
SEL07
LPCLKTST
asl
ANALOG SELECT LOGIC
I13
aportcs
Analog Port
Current Source
IAPORT
I143
ISEL100
ISEL500
ISEL1000
Iref_apcs
ENABLE

FIG 9AB

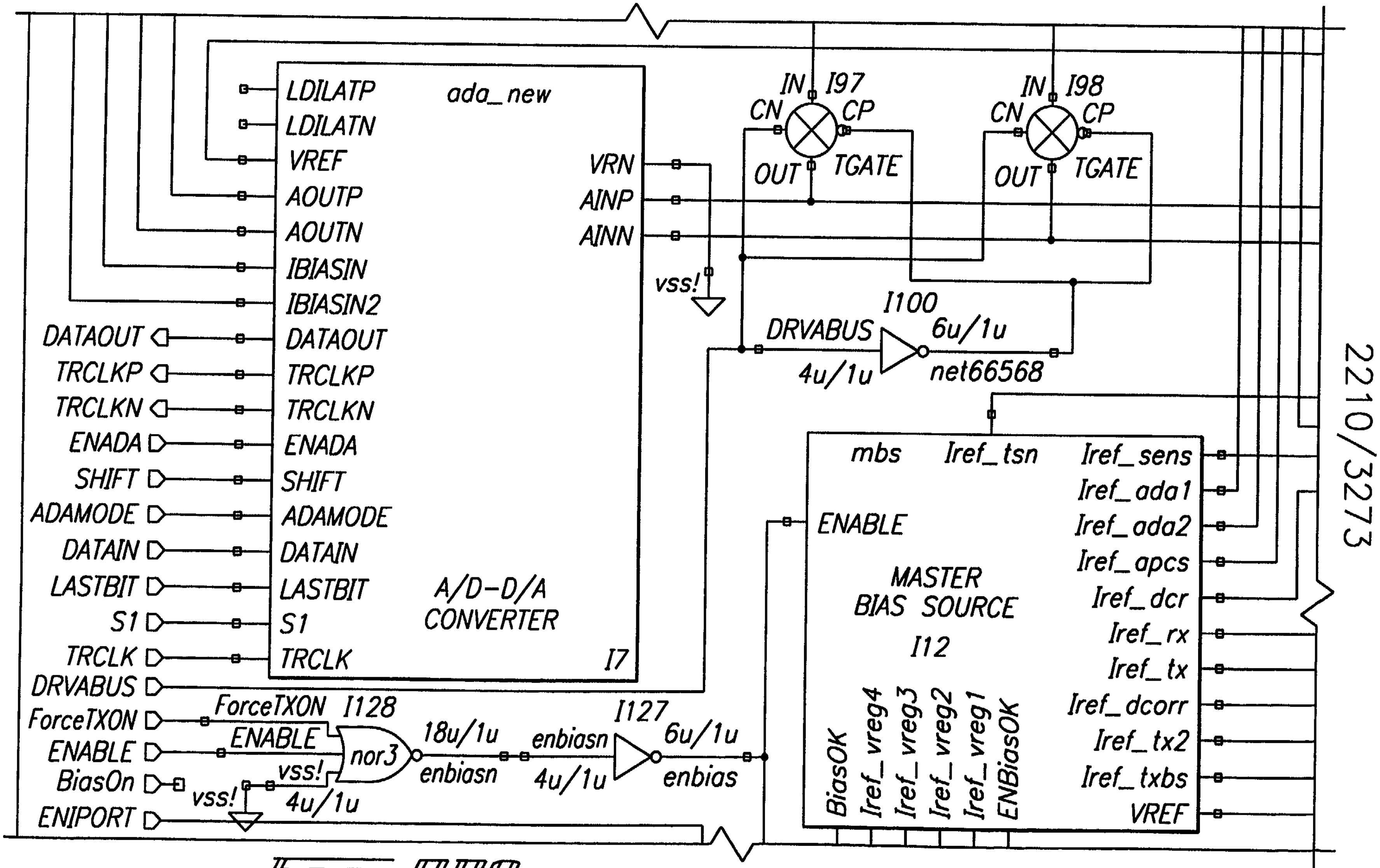

LDILATP
LDILATN
VREF
AOUTP
AOUTN
IBIASIN
IBIASIN2
DATAOUT
TRCLKP
TRCLKN
ENADA
SHIFT
ADAMODE
DATAIN
LASTBIT
S1
TRCLK
ada_new
VRN
AINP
AINN
A/D-D/A
CONVERTER
I7
vss!
DATAOUT
TRCLKP
TRCLKN
ENADA
SHIFT
ADAMODE
DATAIN
LASTBIT
S1
TRCLK
DRVABUS
ForceTXON
ENABLE
BiasOn
ENIPORT
ForceTXON
I128
ENABLE
vss!
nor3
vss!
4u/1u
18u/1u
enbiasn
enbiasn
4u/1u
I127
6u/1u
enbias
IN
I97
CN
CP
OUT
TGATE
IN
I98
CN
CP
OUT
TGATE
I100
DRVABUS
6u/1u
4u/1u
net66568
mbs
Iref_tsn
Iref_sens
Iref_ada1
Iref_ada2
Iref_apcs
Iref_dcr
Iref_rx
Iref_tx
Iref_dcorr
Iref_tx2
Iref_txbs
VREF
ENABLE
MASTER
BIAS SOURCE
I12
BiasOK
Iref_vreg4
Iref_vreg3
Iref_vreg2
Iref_vreg1
ENBiasOK

FIG 9BA

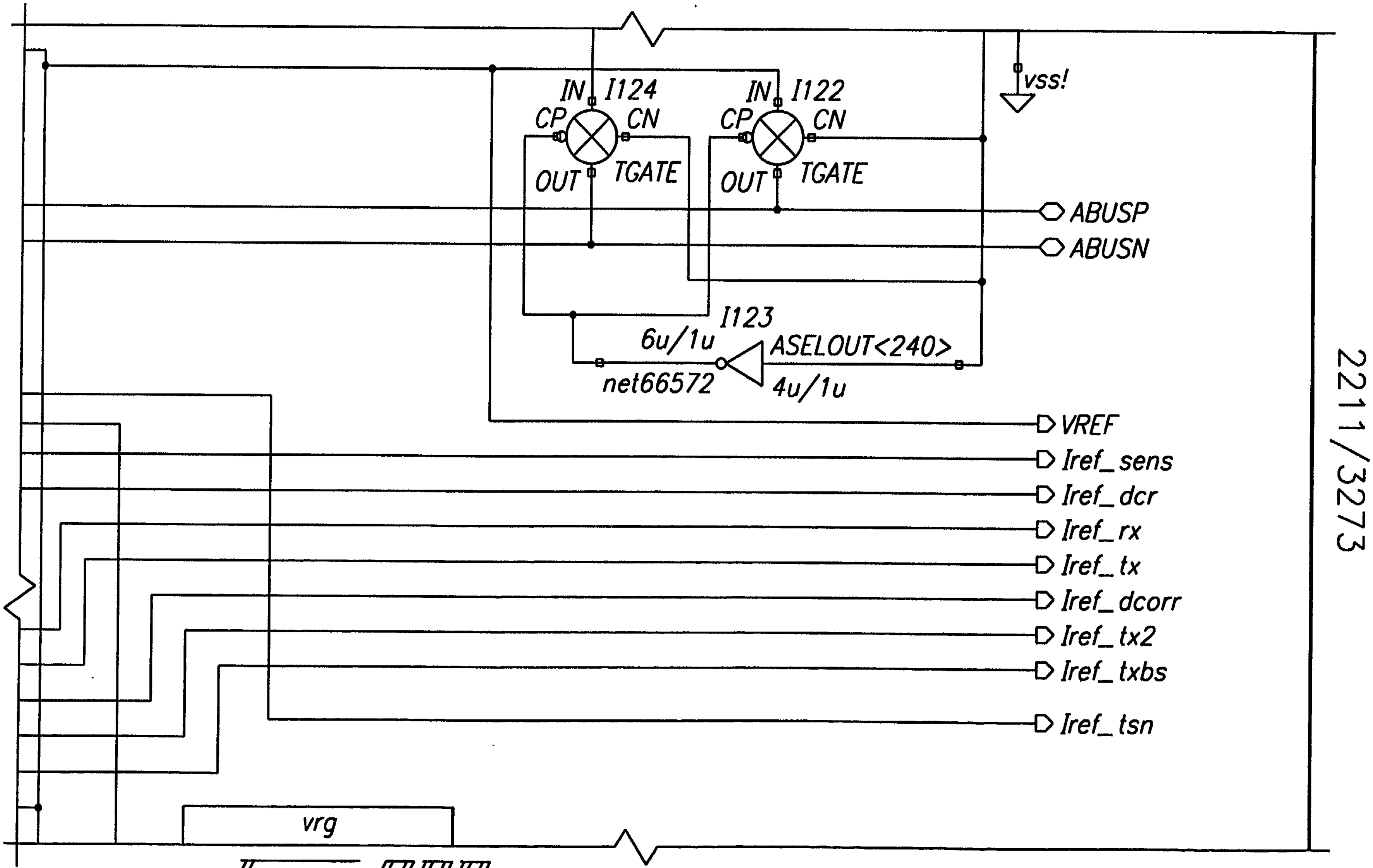

IN
I124
CP
CN
OUT
TGATE
IN
I122
CP
CN
OUT
TGATE
vss!
ABUSP
ABUSN
I123
6u/1u
ASELOUT<240>
net66572
4u/1u
VREF
Iref_sens
Iref_dcr
Iref_rx
Iref_tx
Iref_dcorr
Iref_tx2
Iref_txbs
Iref_tsn
vrg

FIG 9BB

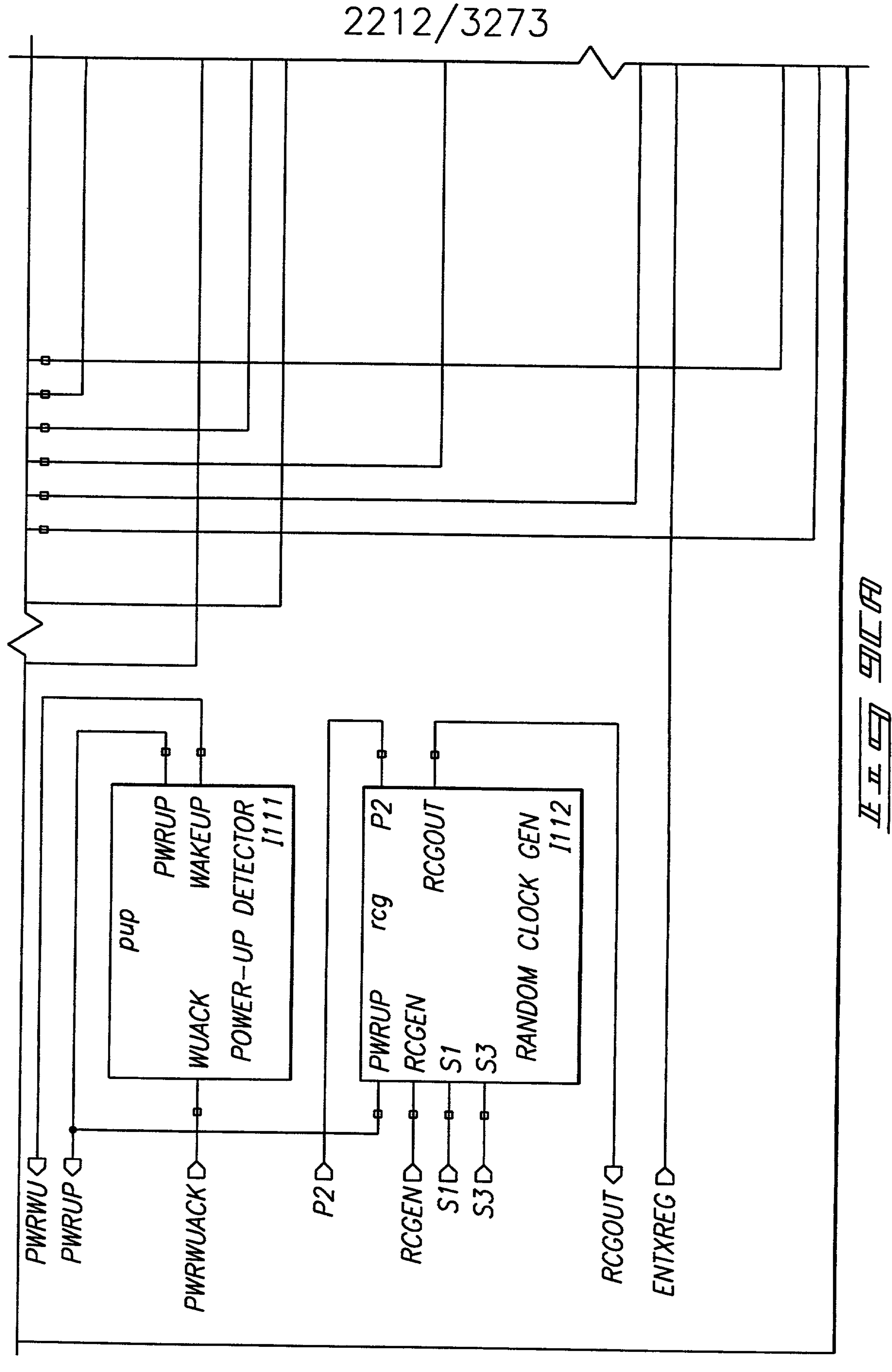

2212/3273
PWRUP
WAKEUP
pup
WUACK
POWER-UP DETECTOR
I111
P2
RCGOUT
rcg
PWRUP
RCGEN
S1
S3
RANDOM CLOCK GEN
I112
PWRWU
PWRUP
PWRWUACK
P2
RCGEN
S1
S3
RCGOUT
ENTXREG

Fig 9CA

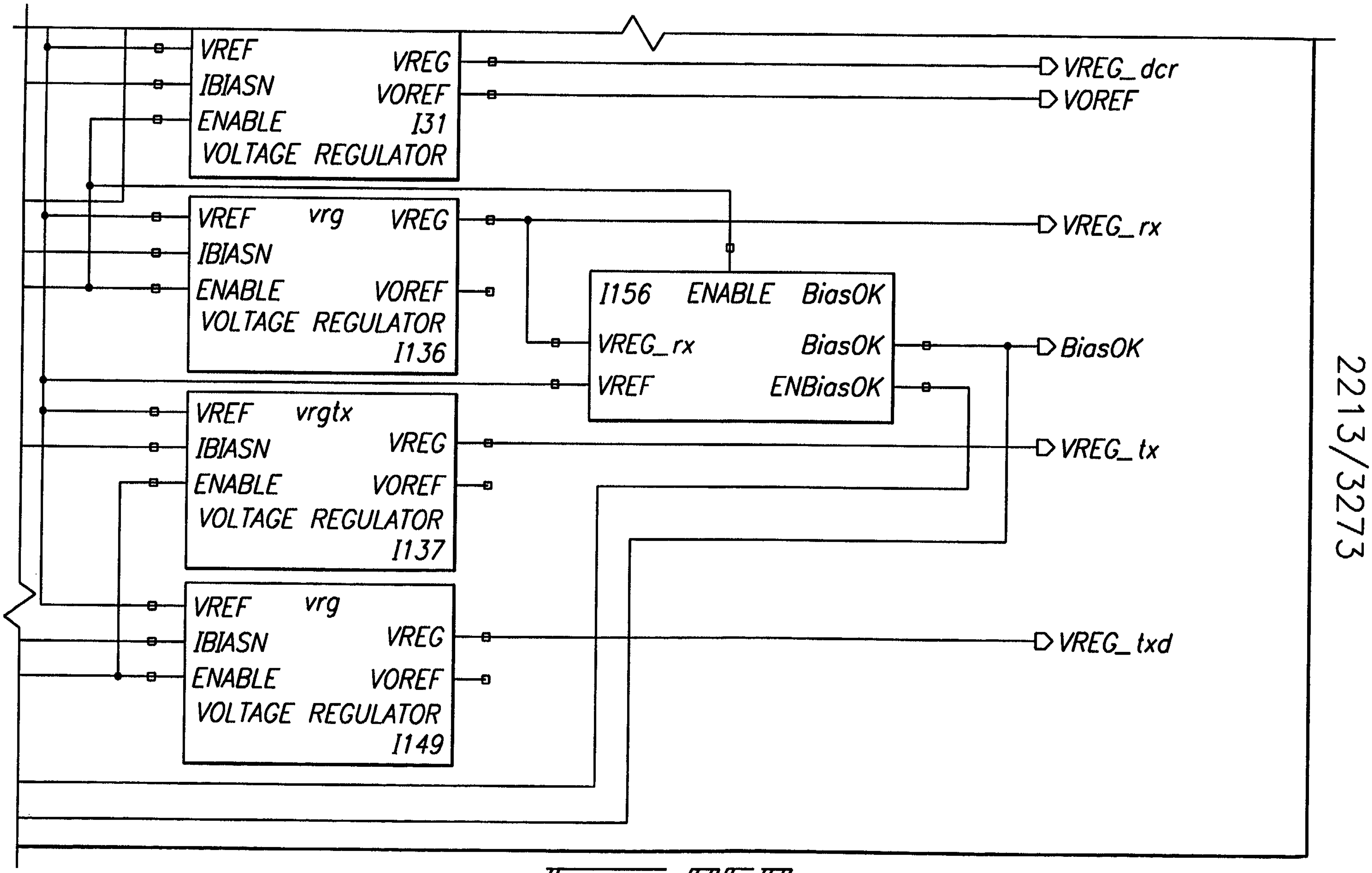

VREF
IBIASN
ENABLE
VREG
VOREF
I31
VOLTAGE REGULATOR
VREF
vrg
VREG
IBIASN
ENABLE
VOREF
VOLTAGE REGULATOR
I136
VREF
vrgtx
IBIASN
VREG
ENABLE
VOREF
VOLTAGE REGULATOR
I137
VREF
vrg
IBIASN
VREG
ENABLE
VOREF
VOLTAGE REGULATOR
I149
I156
ENABLE
BiasOK
VREG_rx
BiasOK
VREF
ENBiasOK
VREG_dcr
VOREF
VREG_rx
BiasOK
VREG_tx
VREG_txd

FIG. 9CB

9.01AA	9.01AB	9.01AC	9.01AD	9.01AE	9.01AF	9.01AG	9.01AH
9.01BA	9.01BB	9.01BC	9.01BD	9.01BE	9.01BF	9.01BG	9.01BH
9.01CA	9.01CB	9.01CC	9.01CD	9.01CE	9.01CF	9.01CG	9.01CH
9.01DA	9.01DB	9.01DC	9.01DD	9.01DE	9.01DF	9.01DG	9.01DH

FIG. 9.01

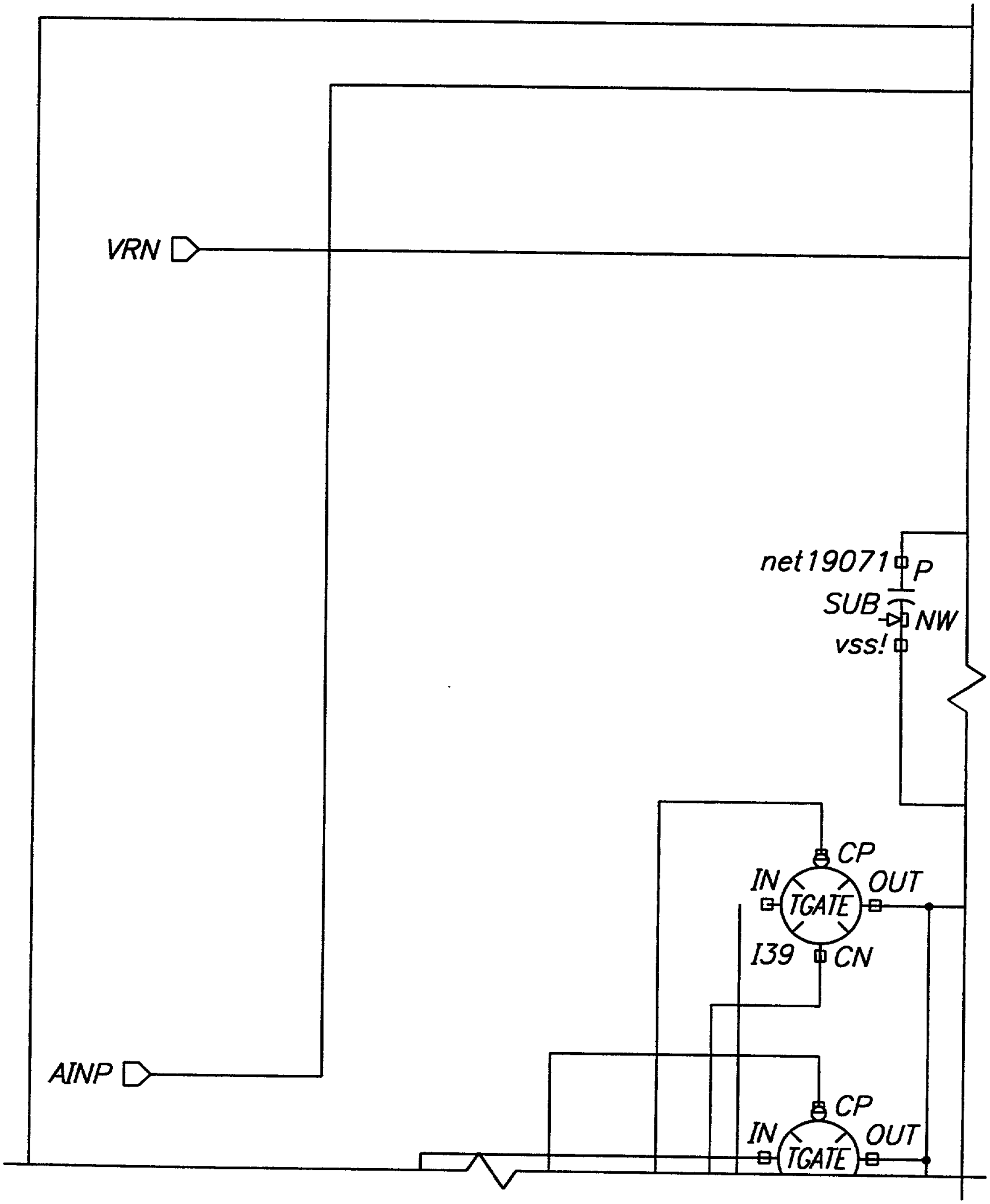

VRN
AINP
net19071
P
SUB
NW
vss!
CP
IN
OUT
TGATE
I39
CN
CP
IN
OUT
TGATE

Fig 9.01AA

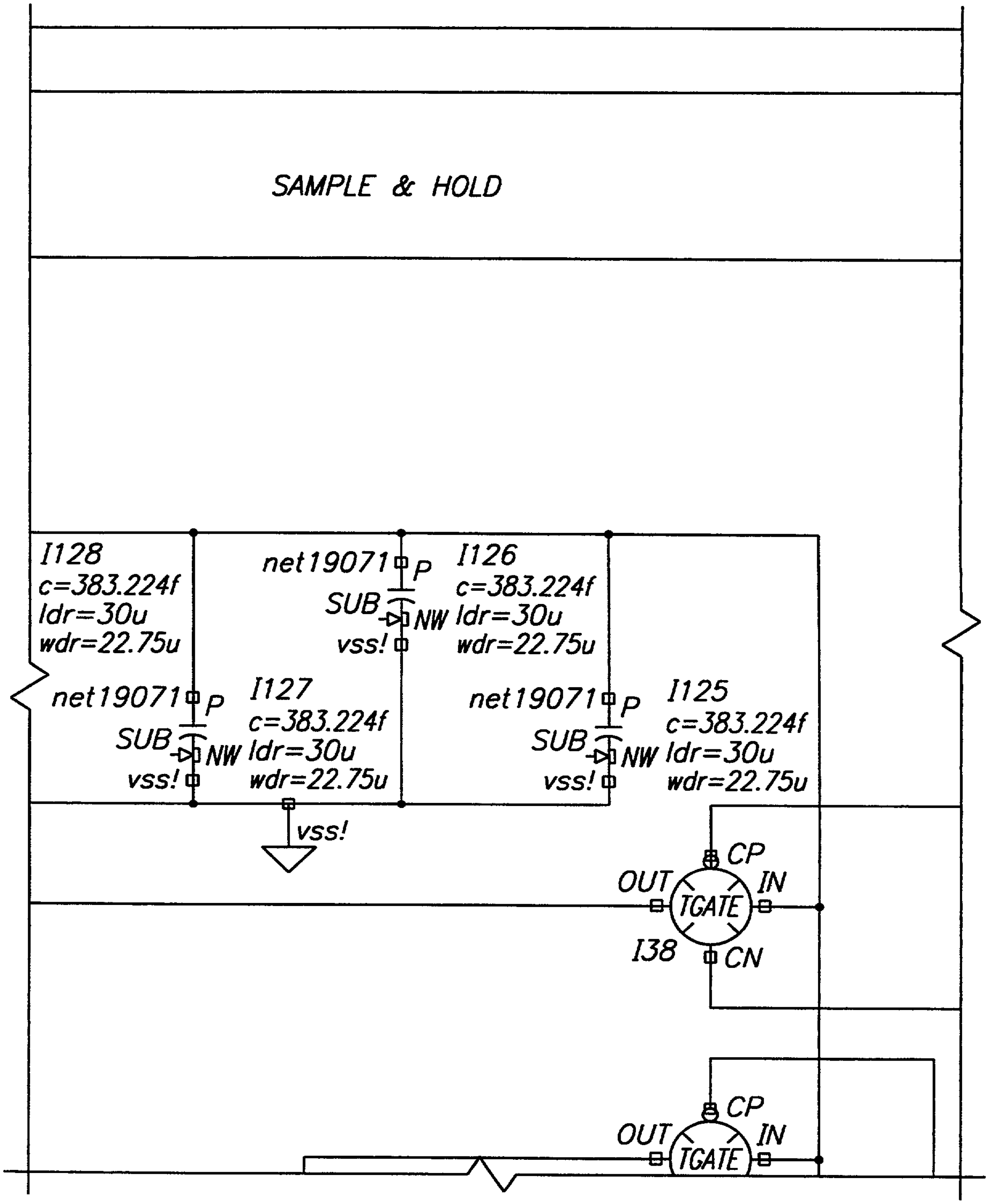

SAMPLE & HOLD
I128
c=383.224f
ldr=30u
wdr=22.75u
net19071
P
SUB
NW
vss!
I127
c=383.224f
ldr=30u
wdr=22.75u
net19071
P
SUB
NW
vss!
I126
c=383.224f
ldr=30u
wdr=22.75u
net19071
P
SUB
NW
vss!
I125
c=383.224f
ldr=30u
wdr=22.75u
vss!
CP
OUT
TGATE
IN
I38
CN
CP
OUT
TGATE
IN

Fig 9.01AB

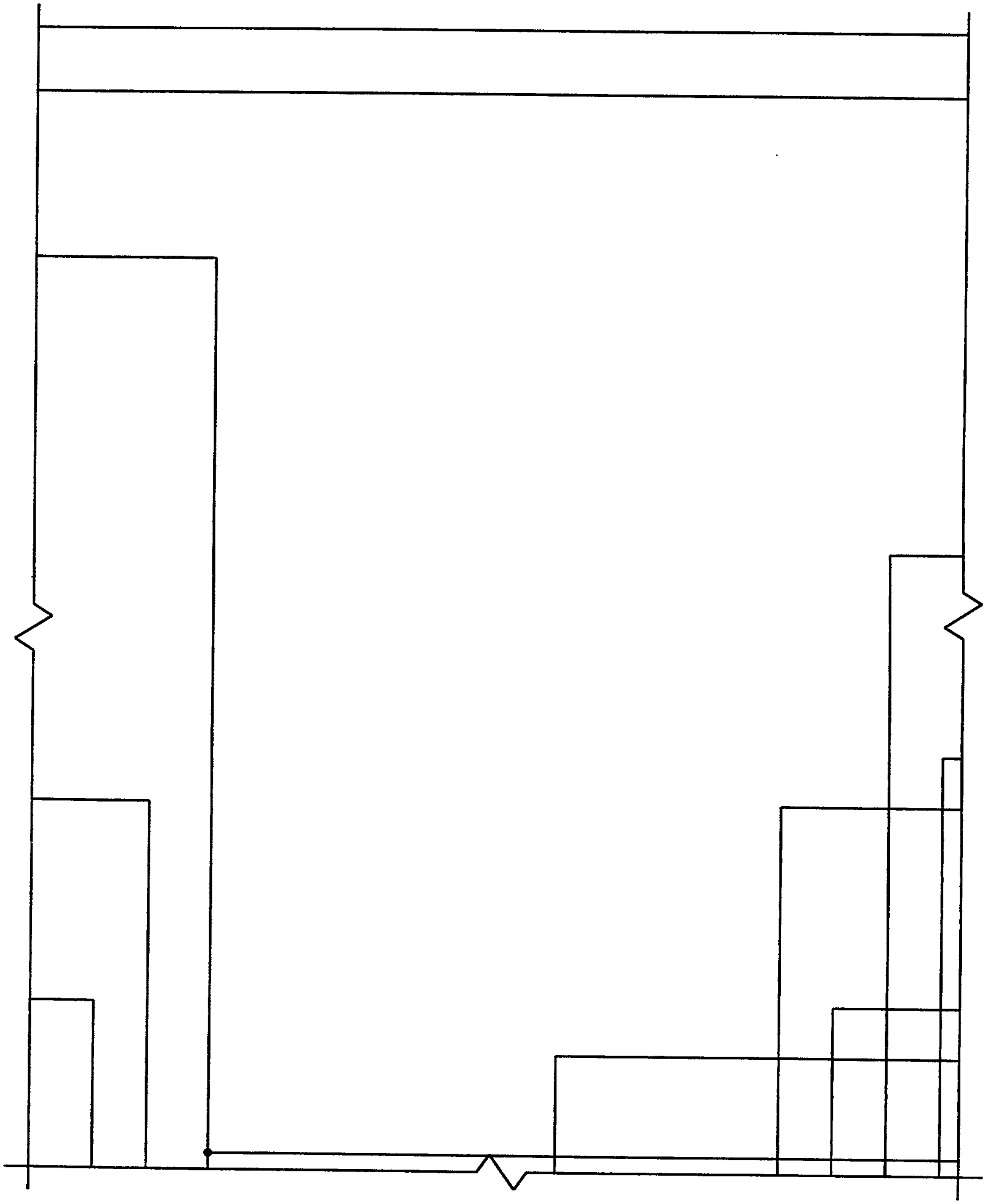


Fig 9.01AC

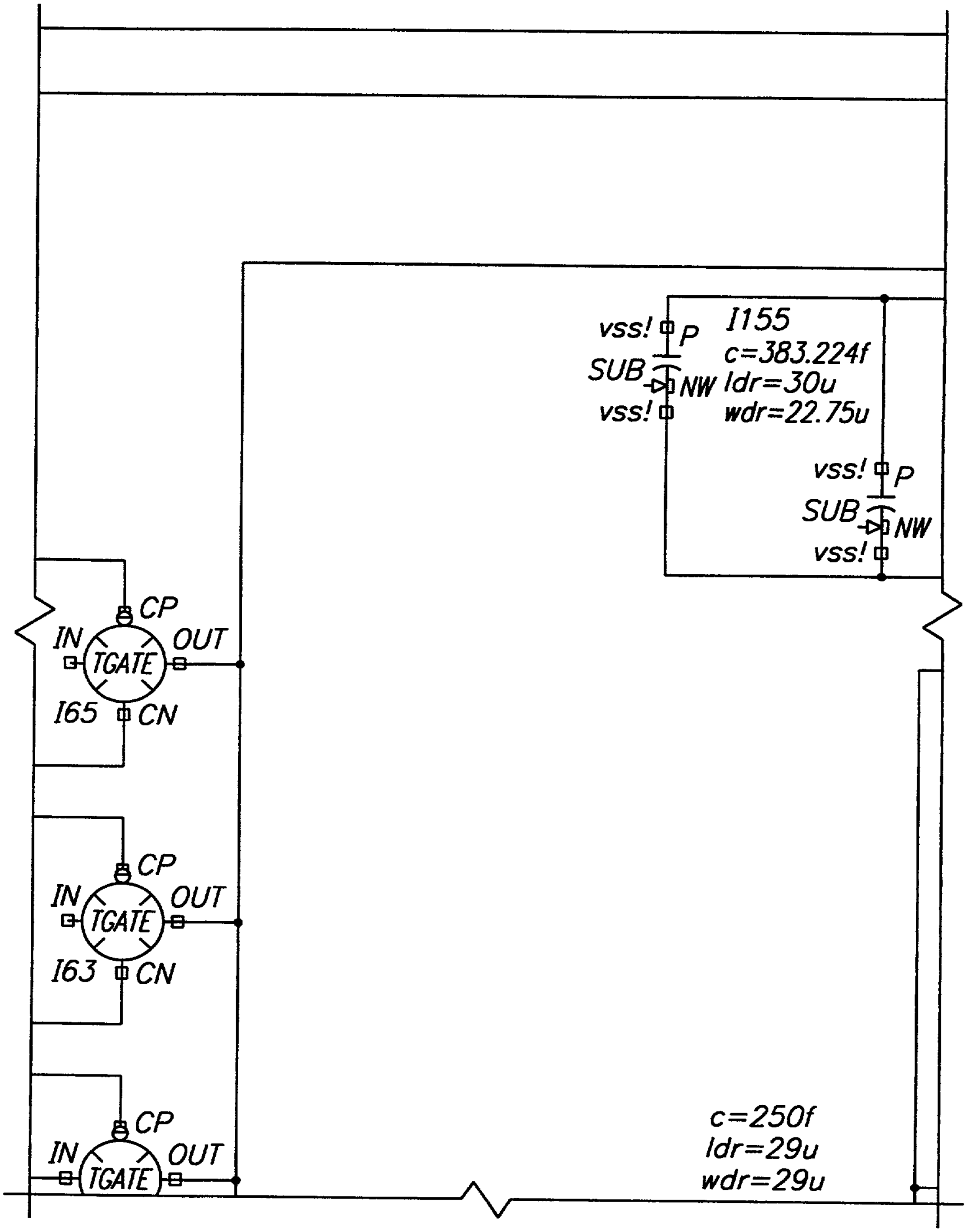

I155
c=383.224f
ldr=30u
wdr=22.75u
vss!
P
SUB
NW
vss!
vss!
P
SUB
NW
vss!
CP
IN
TGATE
OUT
I65
CN
CP
IN
TGATE
OUT
I63
CN
CP
IN
TGATE
OUT
c=250f
ldr=29u
wdr=29u

Fig 9.01AD

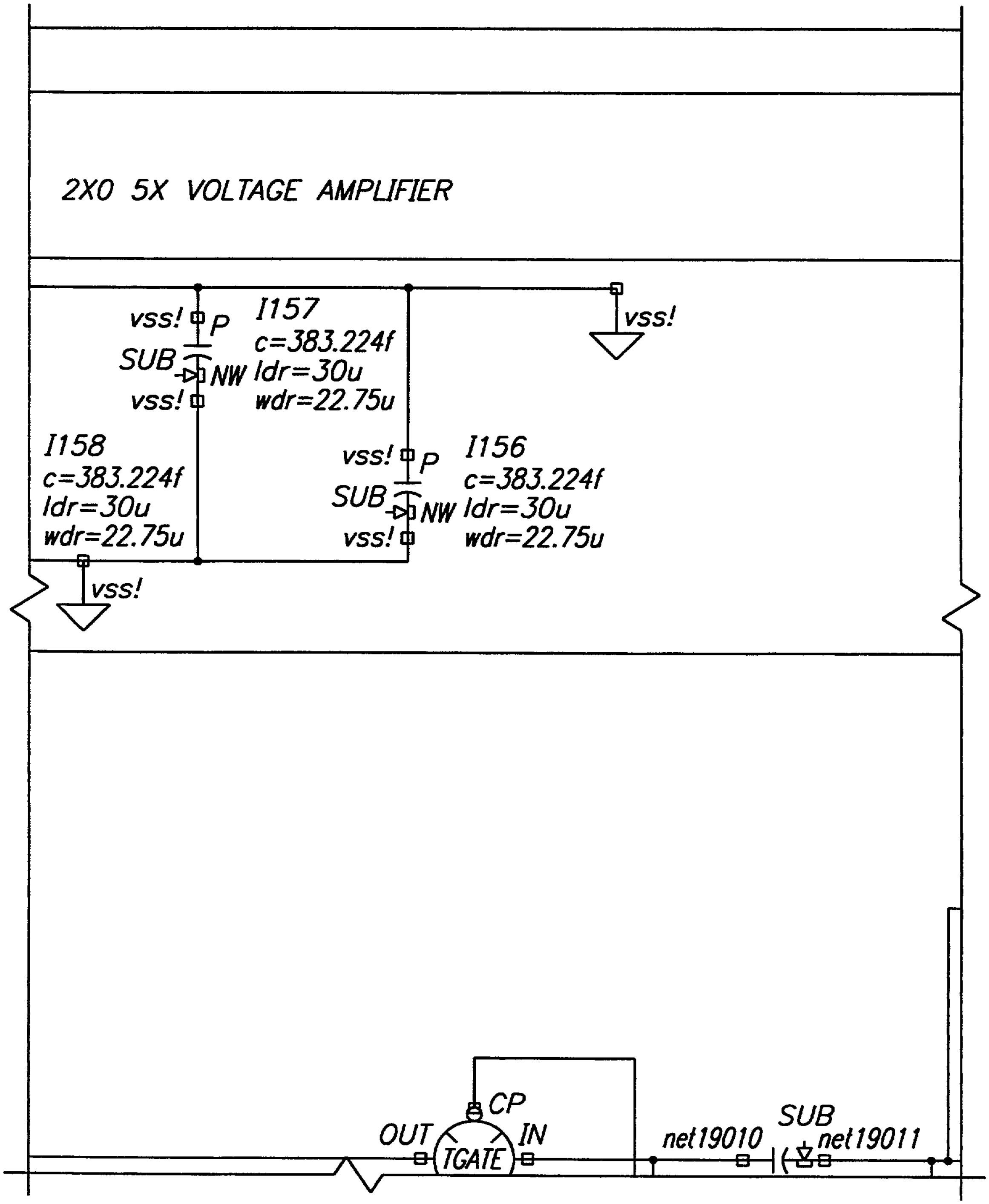

2X0 5X VOLTAGE AMPLIFIER
vss!
P
I157
c=383.224f
ldr=30u
wdr=22.75u
SUB
NW
vss!
vss!
I158
c=383.224f
ldr=30u
wdr=22.75u
vss!
vss!
P
I156
c=383.224f
ldr=30u
wdr=22.75u
SUB
NW
vss!
CP
OUT
TGATE
IN
net19010
SUB
net19011

Fig 9.01AE

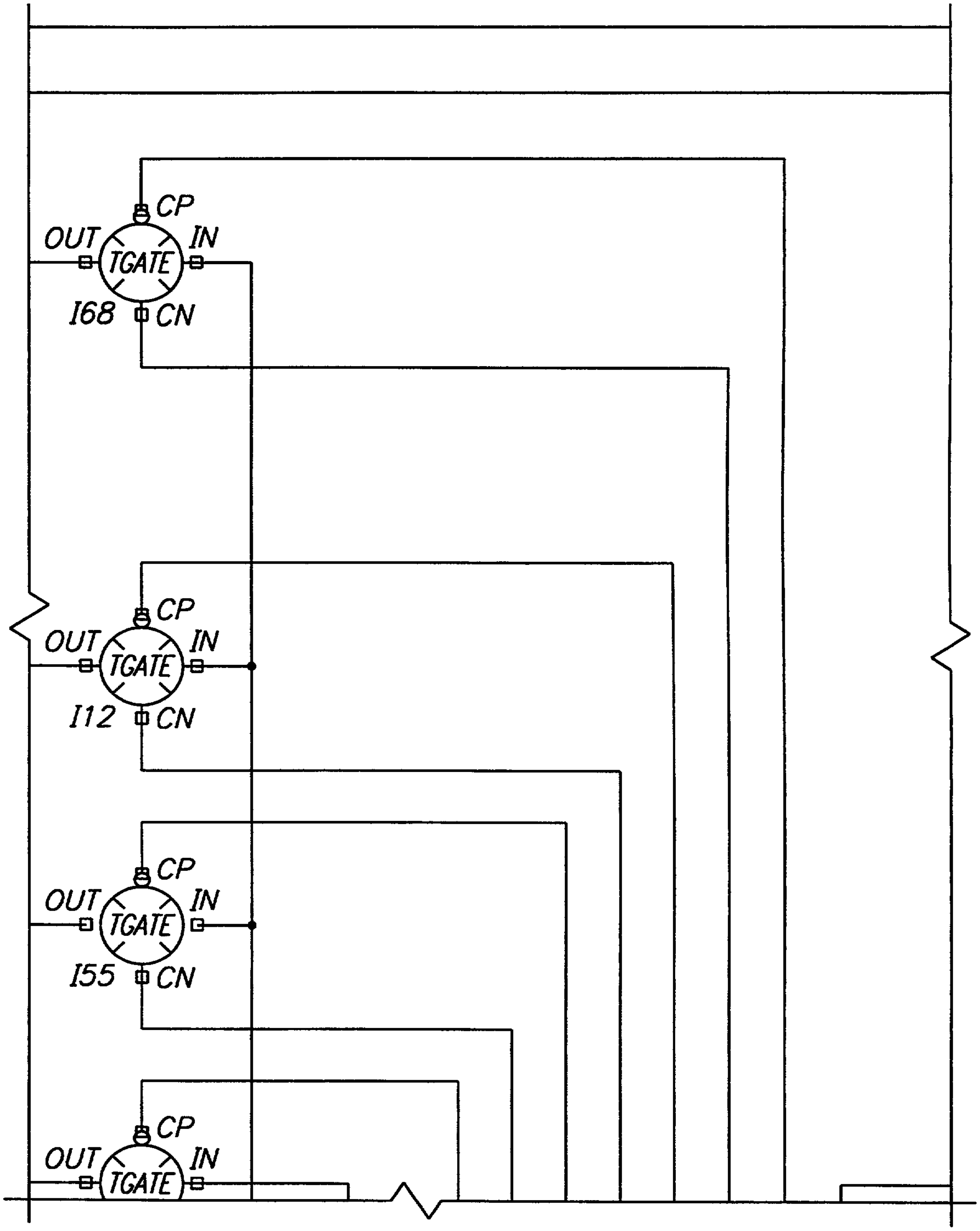

CP
OUT
TGATE
IN
I68
CN
CP
OUT
TGATE
IN
I12
CN
CP
OUT
TGATE
IN
I55
CN
CP
OUT
TGATE
IN

Fig 9.01AF

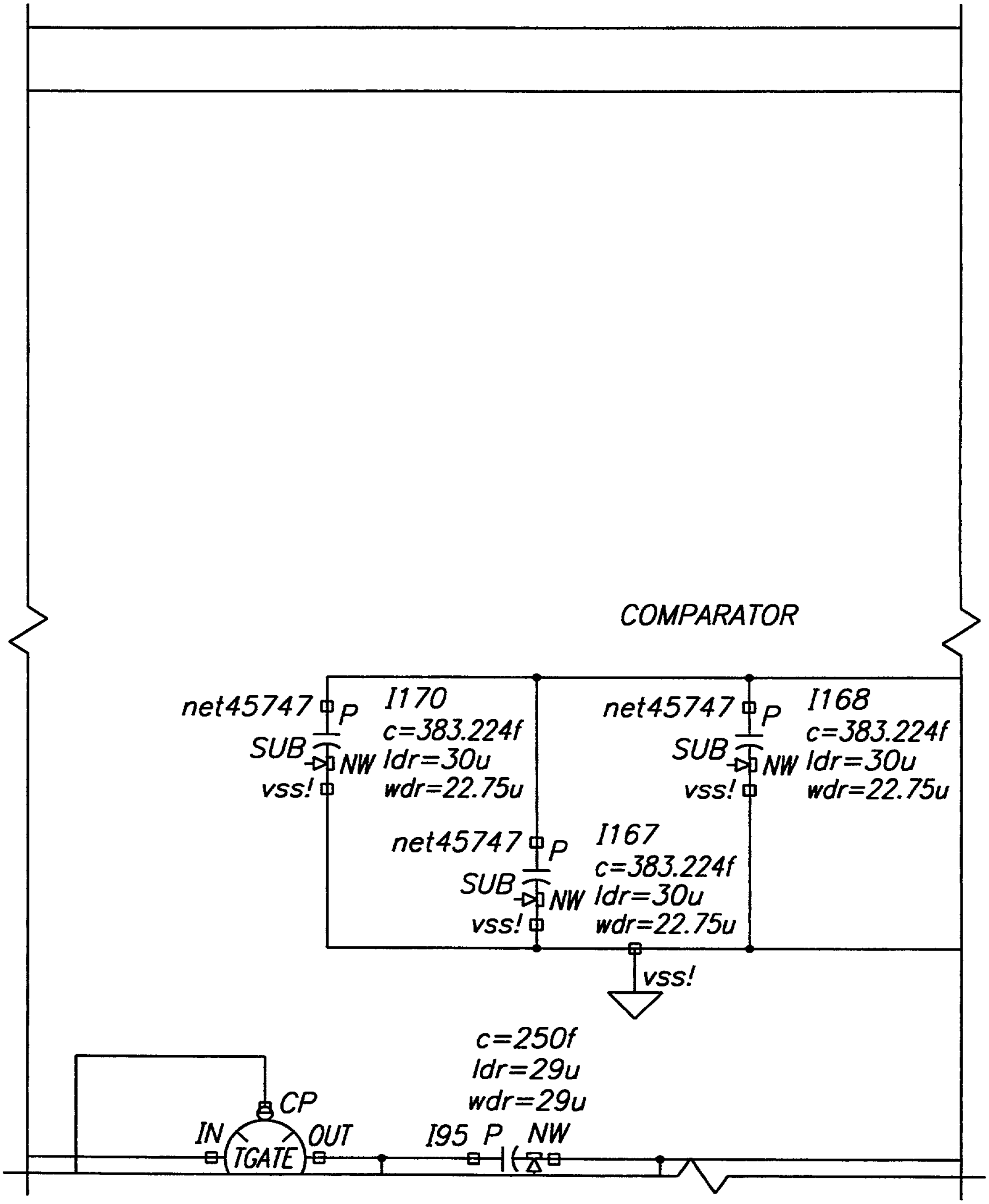

COMPARATOR
net45747
P
SUB
NW
vss!
I170
c=383.224f
ldr=30u
wdr=22.75u
net45747
P
SUB
NW
vss!
I168
c=383.224f
ldr=30u
wdr=22.75u
net45747
P
SUB
NW
vss!
I167
c=383.224f
ldr=30u
wdr=22.75u
vss!
c=250f
ldr=29u
wdr=29u
CP
IN
TGATE
OUT
I95
P
NW

Fig 9.01AG

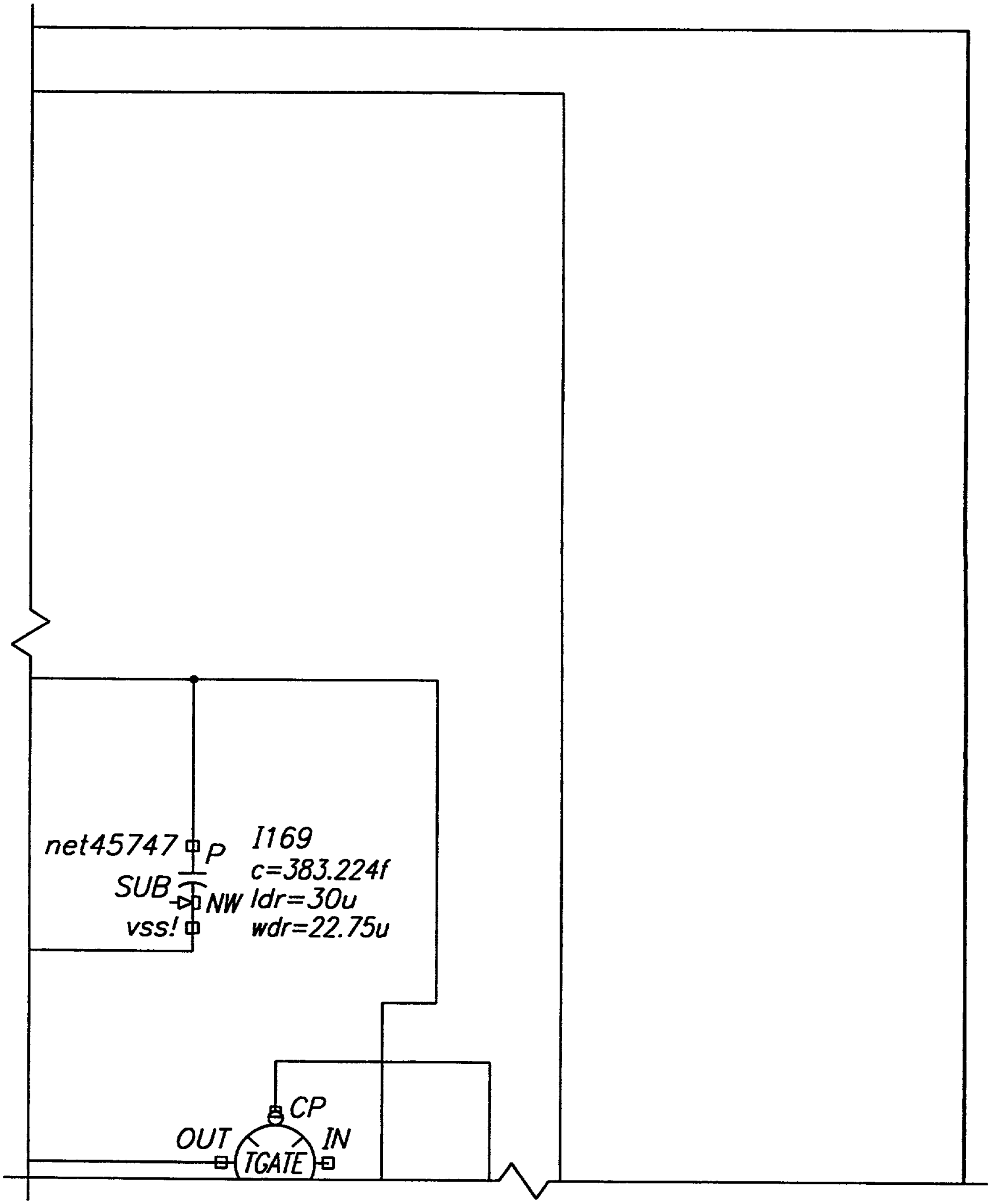

net45747
P
SUB
NW
vss!
I169
c=383.224f
ldr=30u
wdr=22.75u
CP
OUT
IN
TGATE

Fig 9.01AH

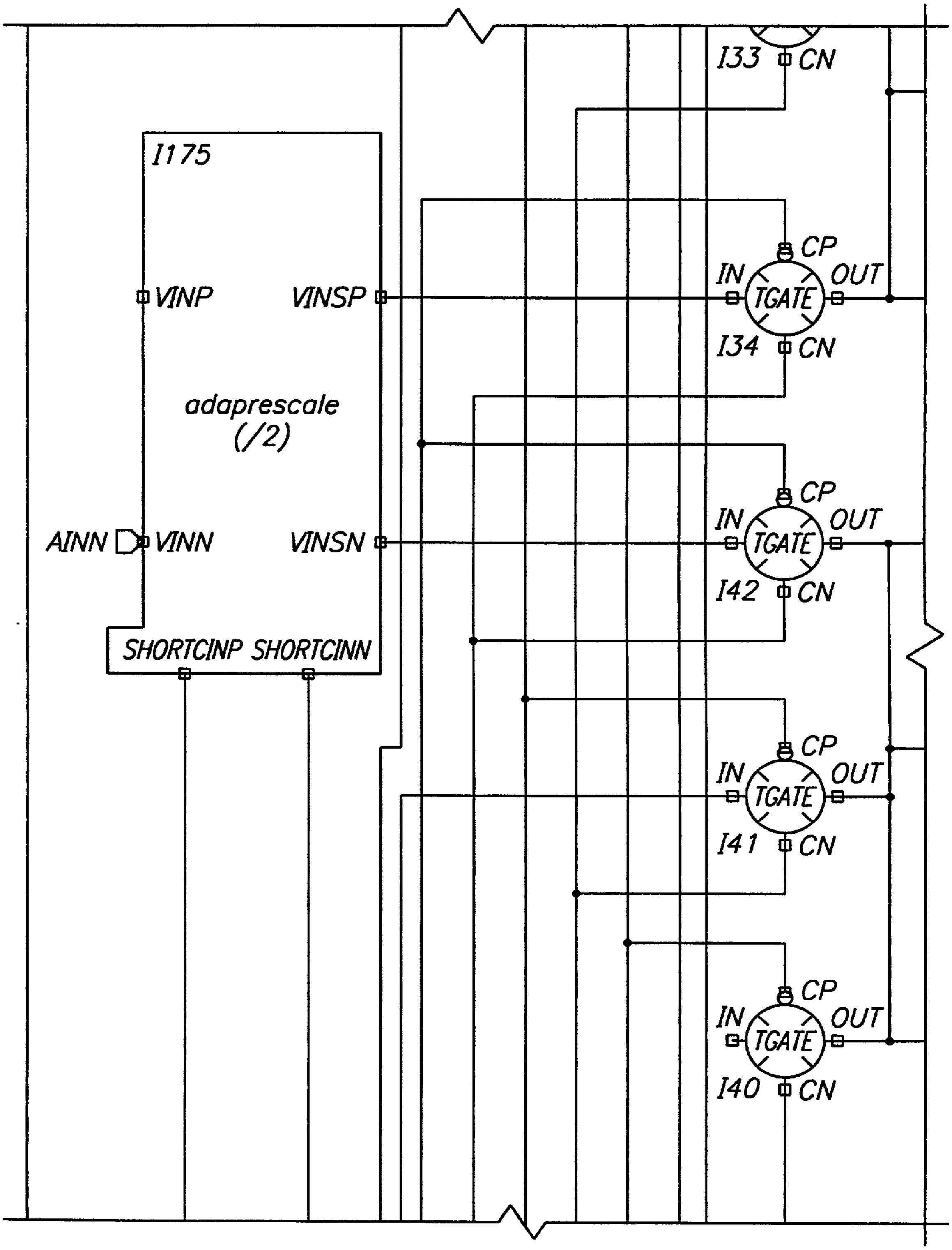

I33
CN
I175
VINP
VINSP
adaprescale
(/2)
AINN
VINN
VINSN
SHORTCINP
SHORTCINN
CP
IN
TGATE
OUT
I34
CN
CP
IN
TGATE
OUT
I42
CN
CP
IN
TGATE
OUT
I41
CN
CP
IN
TGATE
OUT
I40
CN

Fig 9.01BA

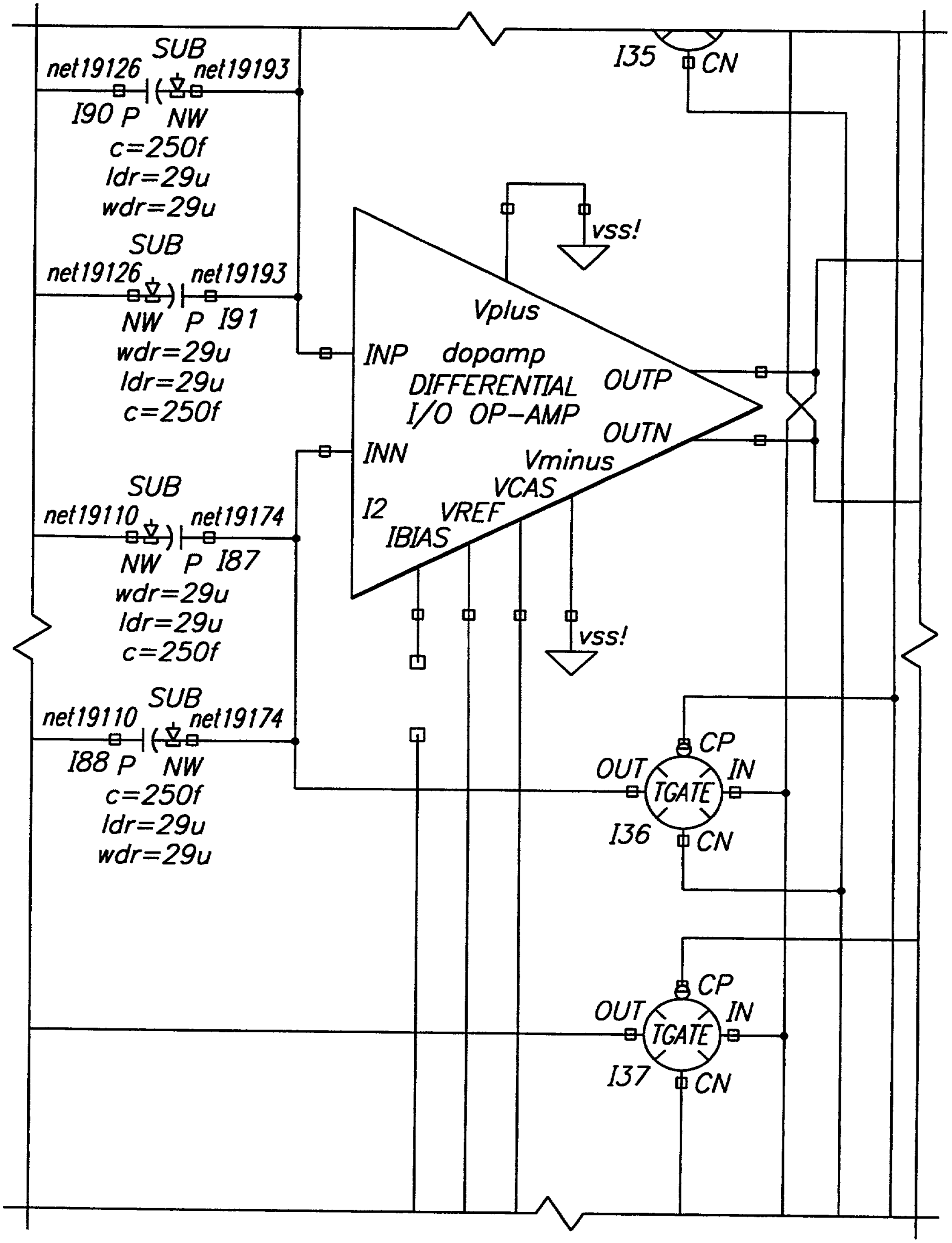

SUB
net19126
net19193
I90 P
NW
c=250f
ldr=29u
wdr=29u
SUB
net19126
net19193
NW
P
I91
wdr=29u
ldr=29u
c=250f
SUB
net19110
net19174
NW
P
I87
wdr=29u
ldr=29u
c=250f
SUB
net19110
net19174
I88 P
NW
c=250f
ldr=29u
wdr=29u
I35
CN
vss!
Vplus
INP
dopamp
DIFFERENTIAL
I/O OP-AMP
OUTP
OUTN
INN
Vminus
VCAS
I2
VREF
IBIAS
vss!
CP
OUT
IN
TGATE
I36
CN
CP
OUT
IN
TGATE
I37
CN

Fig. 90.01BB

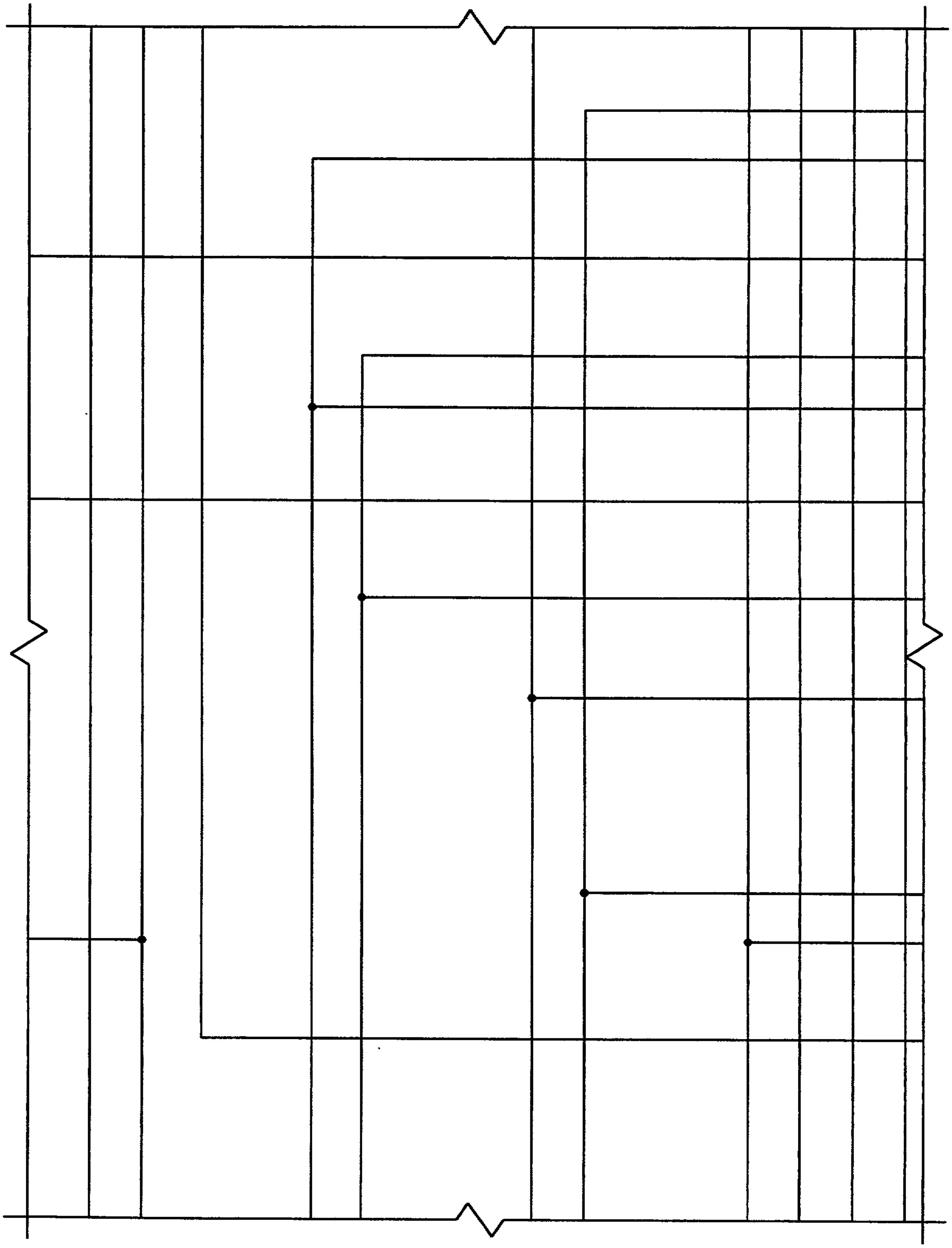


Fig 9.01BC

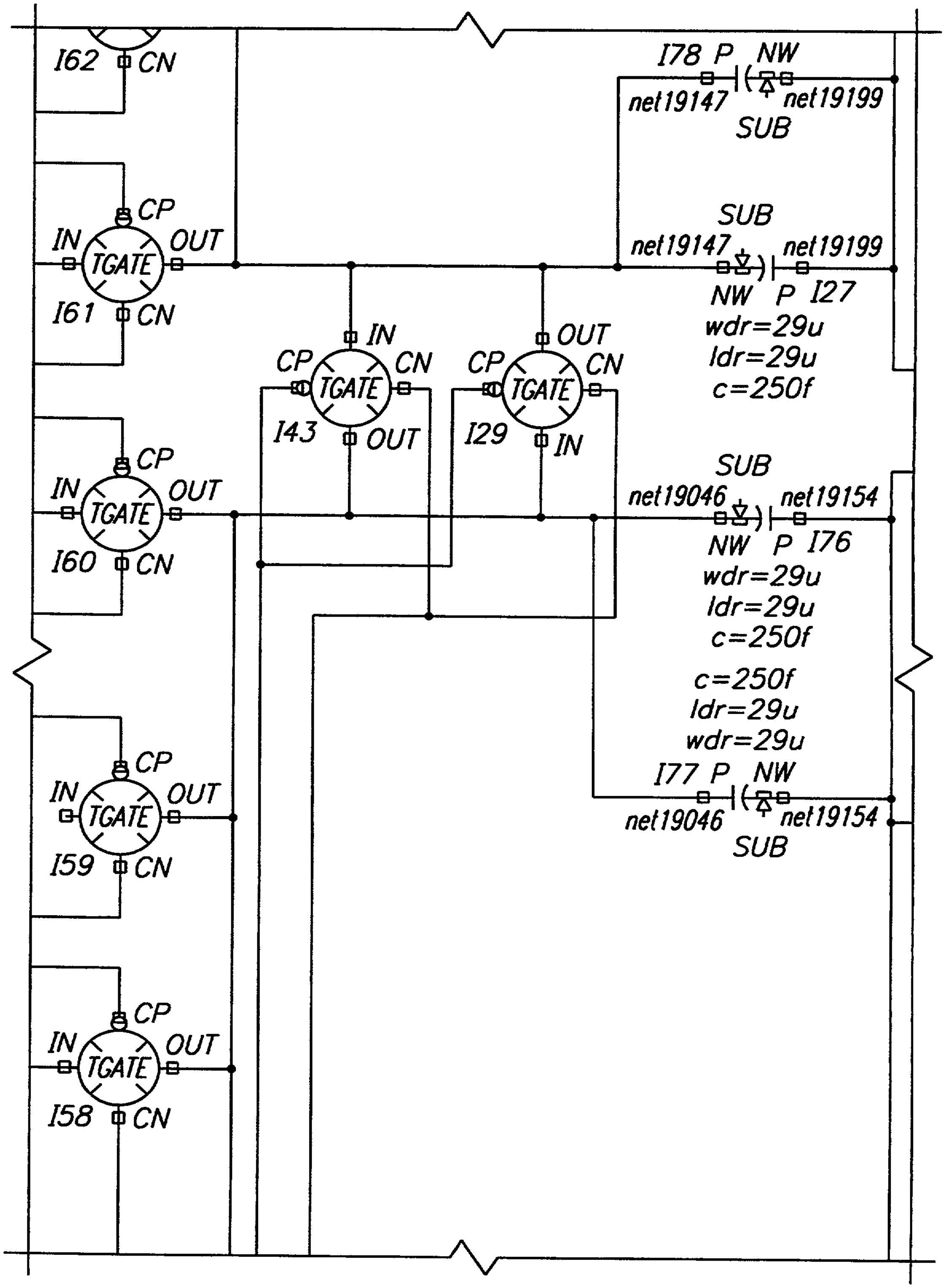

I62
CN
I78 P
NW
net19147
net19199
SUB
CP
IN
TGATE
OUT
I61
CN
SUB
net19147
net19199
NW
P
I27
wdr=29u
ldr=29u
c=250f
IN
CP
TGATE
CN
I43
OUT
OUT
CP
TGATE
CN
I29
IN
CP
IN
TGATE
OUT
I60
CN
SUB
net19046
net19154
NW
P
I76
wdr=29u
ldr=29u
c=250f
c=250f
ldr=29u
wdr=29u
I77 P
NW
net19046
net19154
SUB
CP
IN
TGATE
OUT
I59
CN
CP
IN
TGATE
OUT
I58
CN

Fig 9.01BD

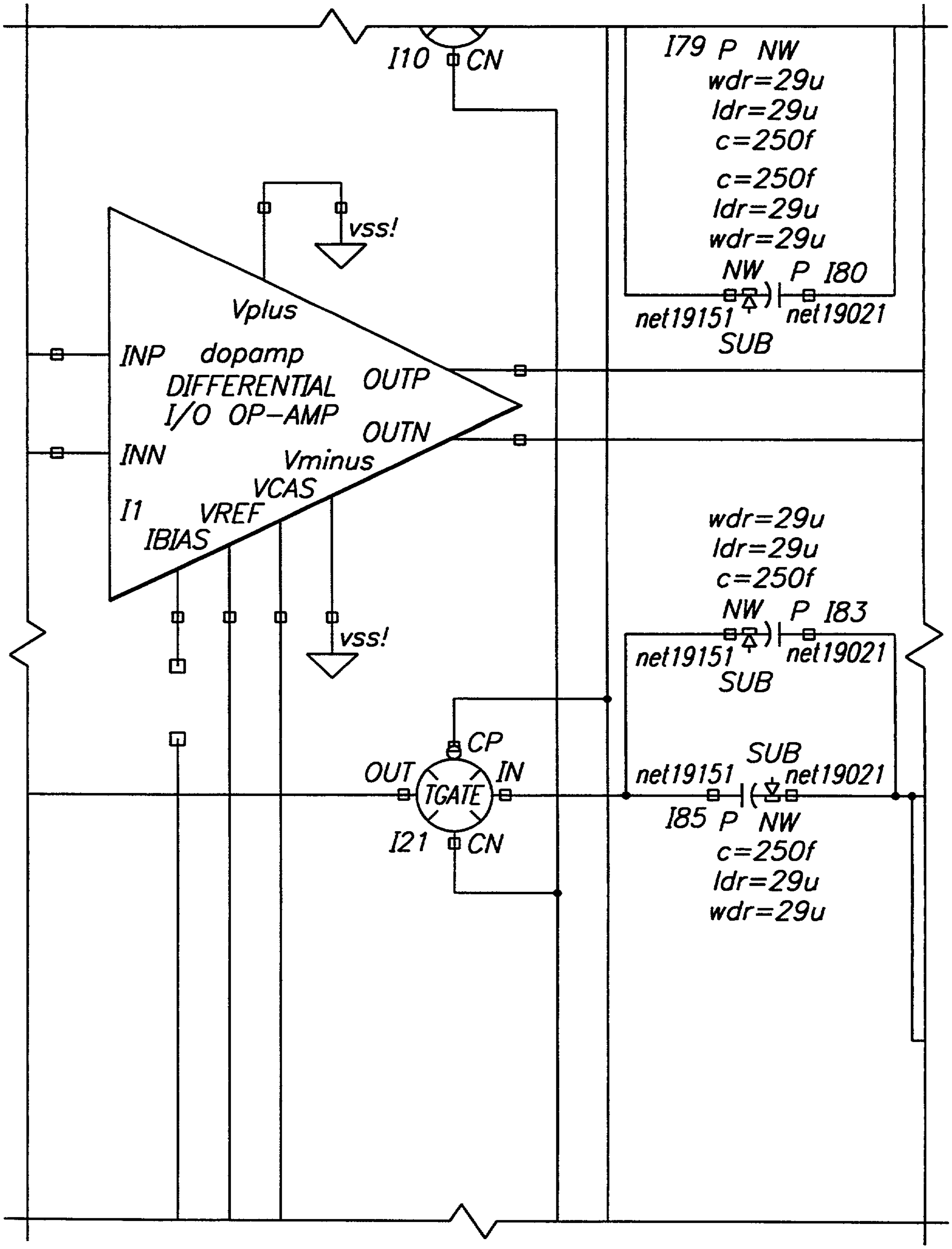

I10
CN
I79 P NW
wdr=29u
ldr=29u
c=250f
c=250f
ldr=29u
wdr=29u
NW P I80
net19151
net19021
SUB
vss!
Vplus
INP
dopamp
DIFFERENTIAL
I/O OP-AMP
OUTP
OUTN
INN
Vminus
VCAS
I1
VREF
IBIAS
vss!
wdr=29u
ldr=29u
c=250f
NW P I83
net19151
net19021
SUB
CP
OUT
TGATE
IN
I21
CN
SUB
net19151
net19021
I85 P NW
c=250f
ldr=29u
wdr=29u

Fig 9.01BE

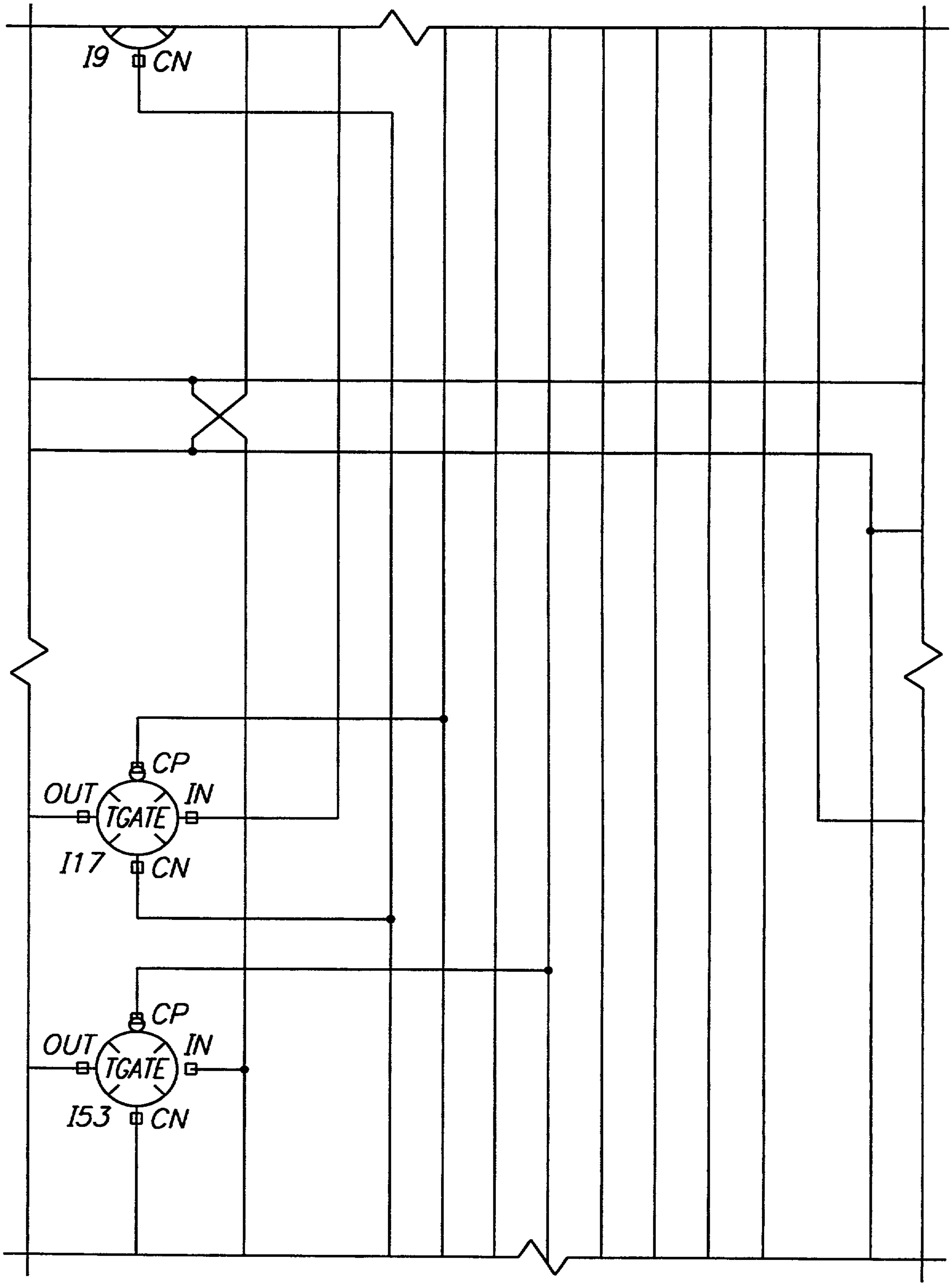


Fig 9.01BF

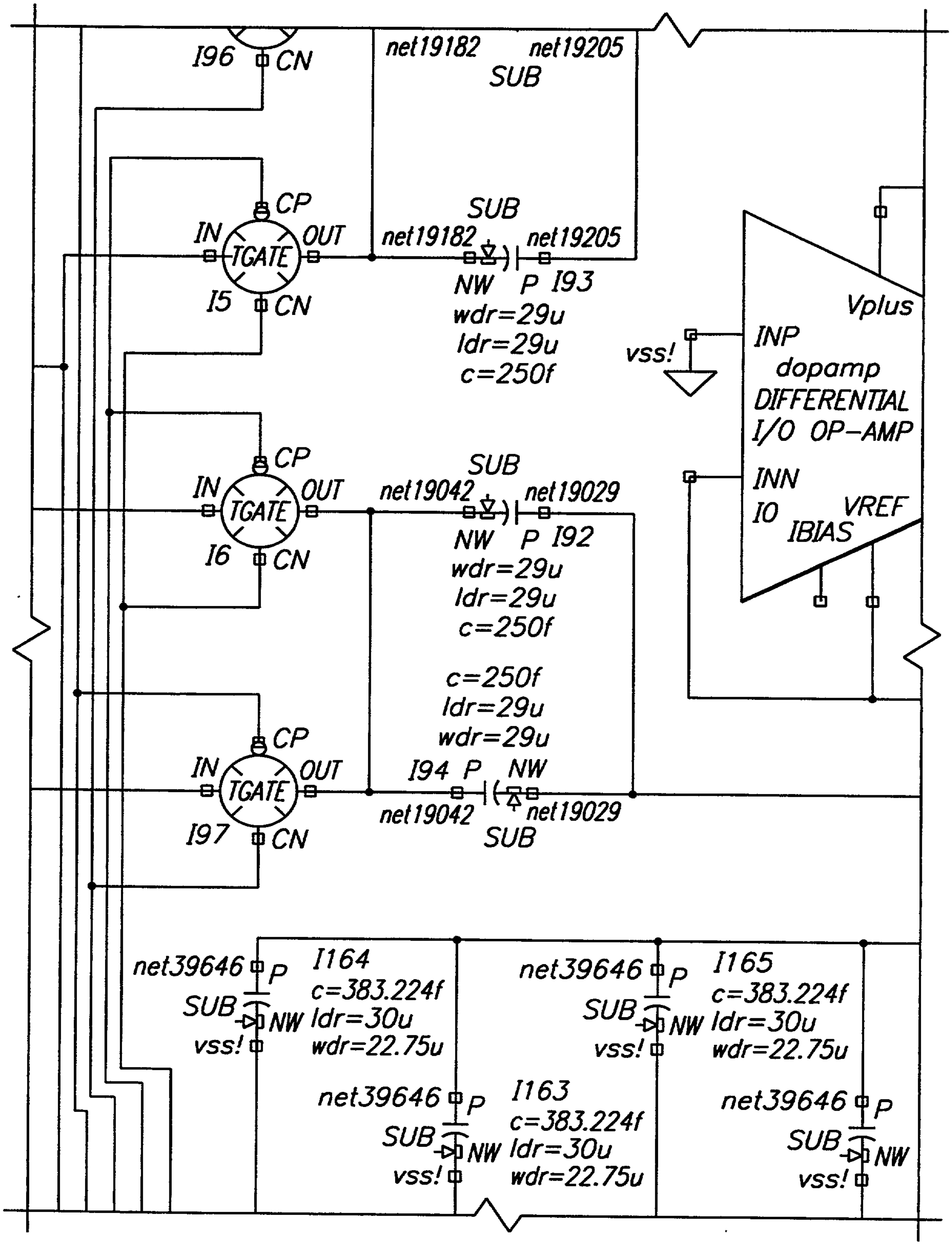

I96
CN
net19182
net19205
SUB
CP
IN
TGATE
OUT
I5
CN
SUB
net19182
net19205
NW
P
I93
wdr=29u
ldr=29u
c=250f
CP
IN
TGATE
OUT
I6
CN
SUB
net19042
net19029
NW
P
I92
wdr=29u
ldr=29u
c=250f
c=250f
ldr=29u
wdr=29u
CP
IN
TGATE
OUT
I97
CN
I94
P
NW
net19042
net19029
SUB
Vplus
INP
vss!
dopamp
DIFFERENTIAL
I/O OP-AMP
INN
IO
VREF
IBIAS
net39646
P
SUB
NW
vss!
I164
c=383.224f
ldr=30u
wdr=22.75u
net39646
P
SUB
NW
vss!
I165
c=383.224f
ldr=30u
wdr=22.75u
net39646
P
SUB
NW
vss!
I163
c=383.224f
ldr=30u
wdr=22.75u
net39646
P
SUB
NW
vss!

Fig 9.01BG

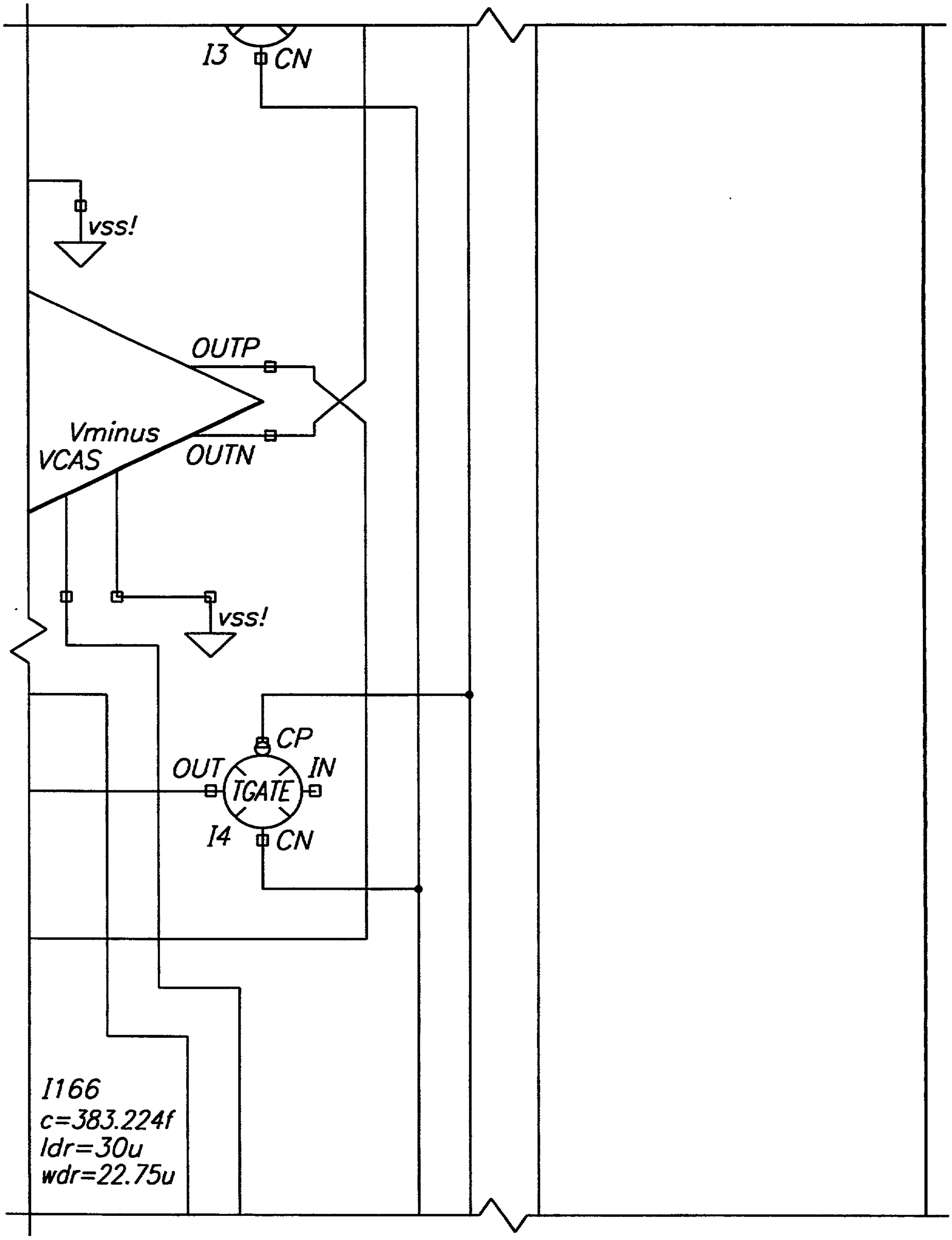

I3
CN
vss!
OUTP
Vminus
VCAS
OUTN
vss!
CP
OUT
IN
TGATE
I4
CN
I166
c=383.224f
ldr=30u
wdr=22.75u

Fig 9.01BH

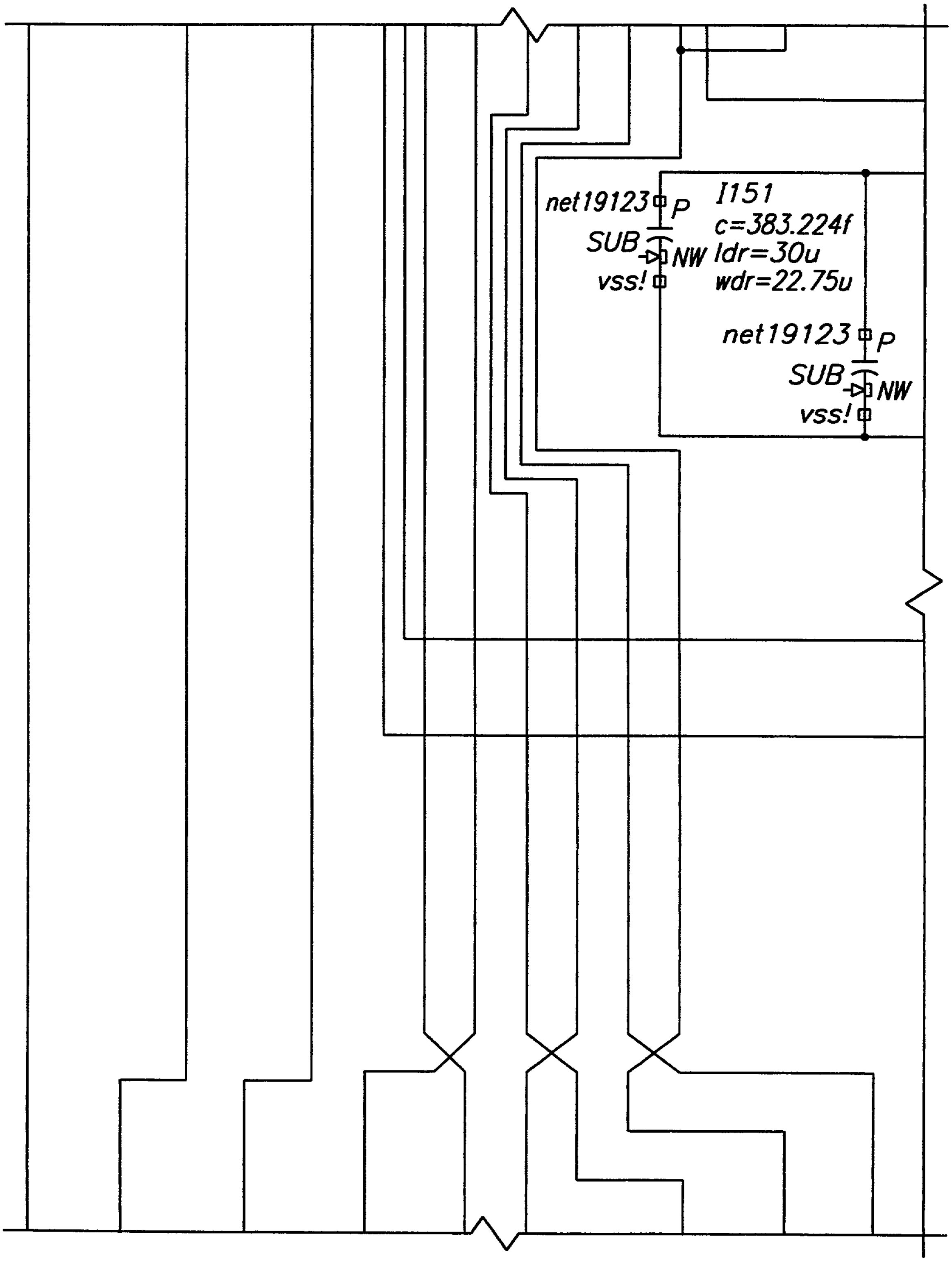

net19123
P
SUB
NW
vss!
I151
c=383.224f
ldr=30u
wdr=22.75u
net19123
P
SUB
NW
vss!

Fig 9.01CA

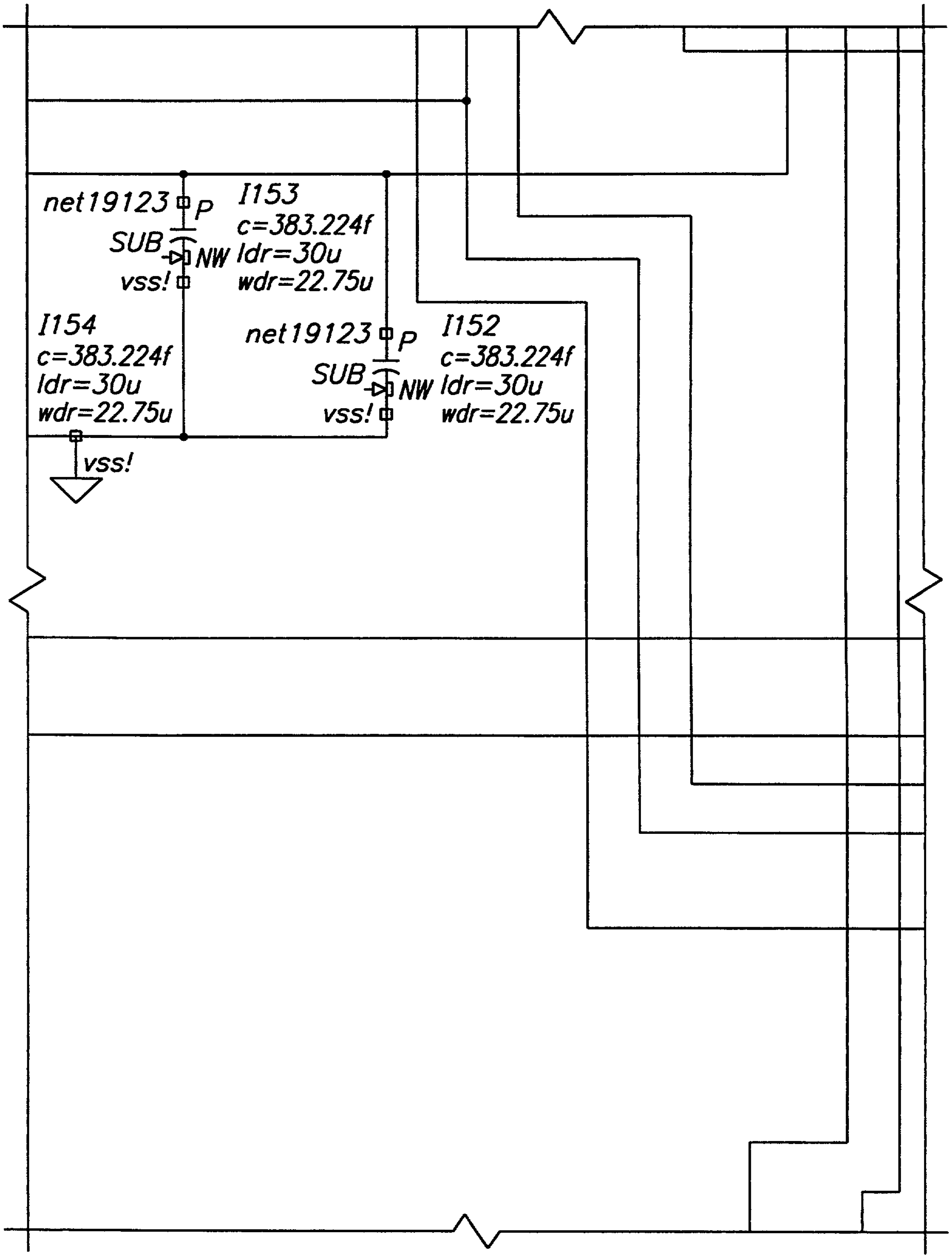

net19123
P
SUB
NW
vss!
I153
c=383.224f
ldr=30u
wdr=22.75u
I154
c=383.224f
ldr=30u
wdr=22.75u
net19123
P
SUB
NW
vss!
I152
c=383.224f
ldr=30u
wdr=22.75u
vss!

Fig 9.01CB

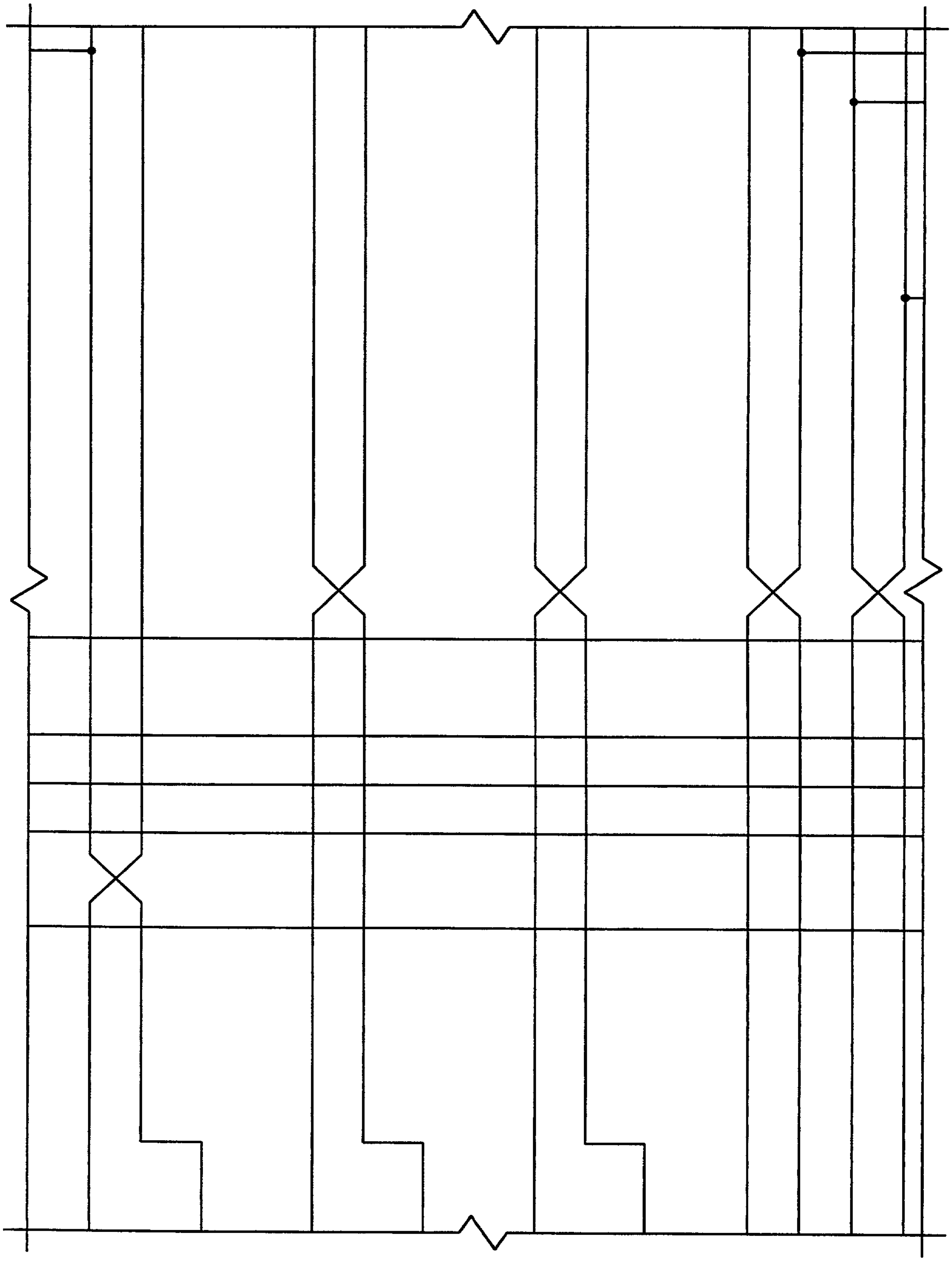


Fig 9.01CC

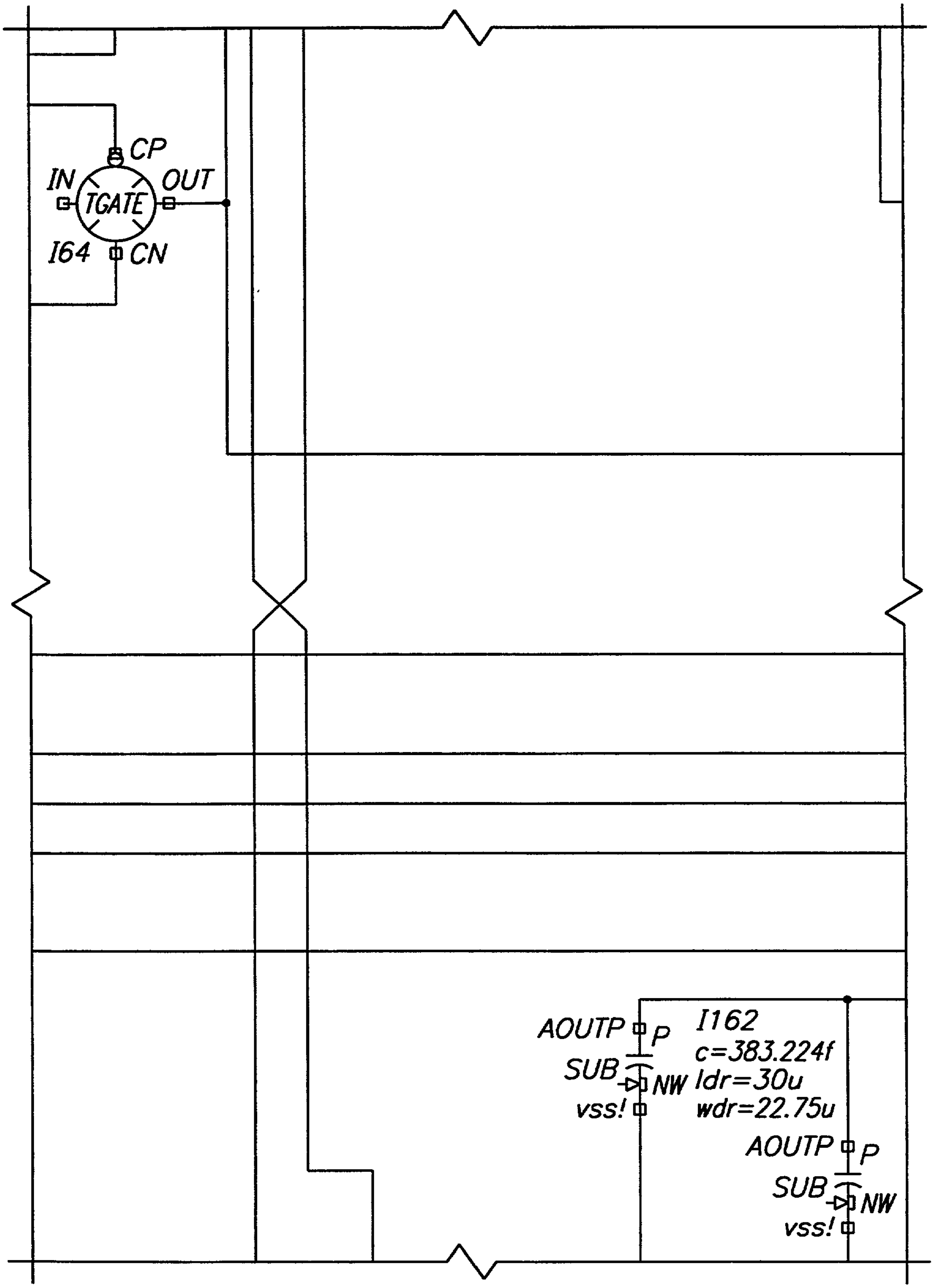

CP
IN
TGATE
OUT
I64
CN
AOUTP
P
SUB
NW
vss!
I162
c=383.224f
ldr=30u
wdr=22.75u
AOUTP
P
SUB
NW
vss!

FIG 9.01CD

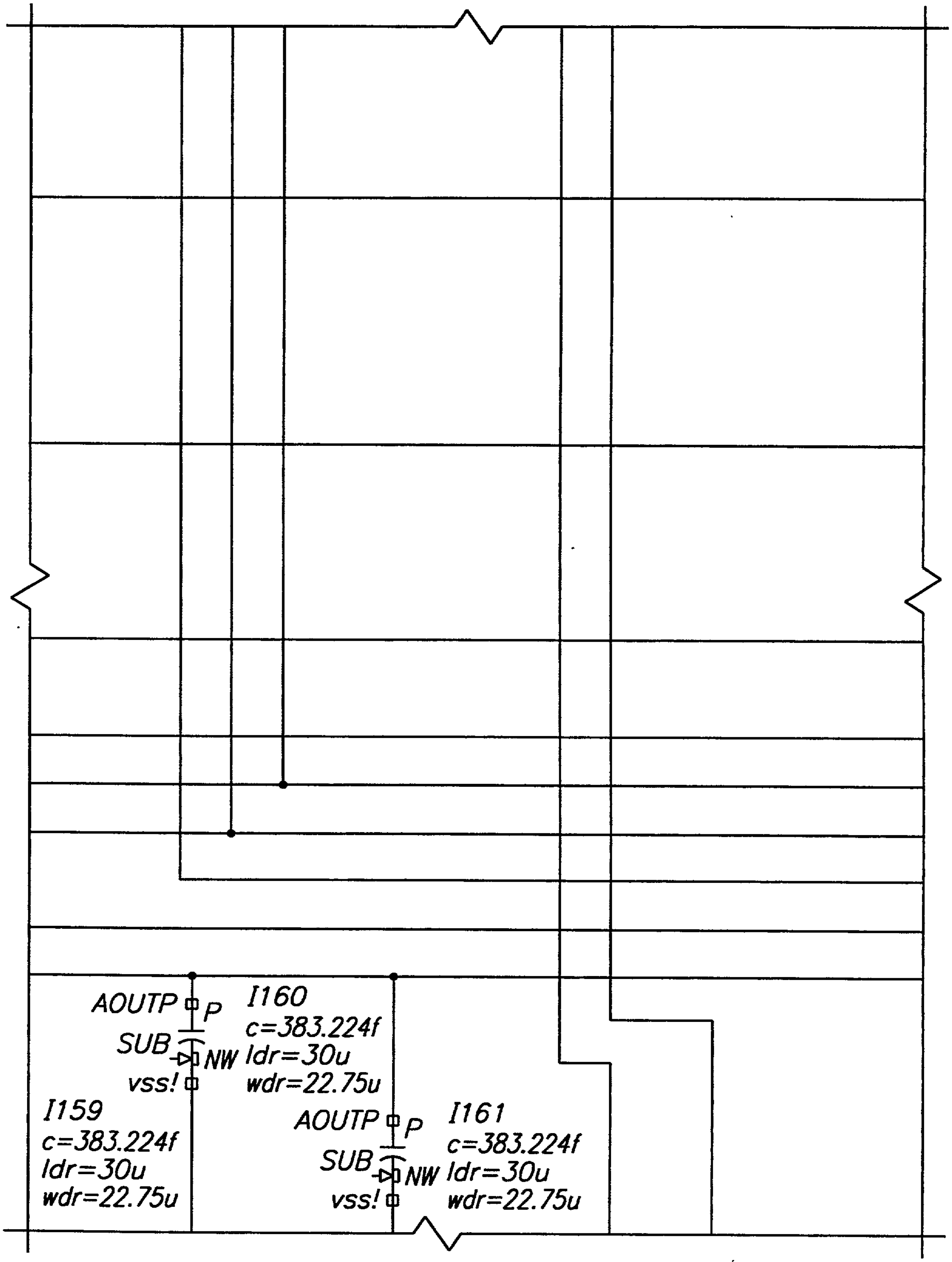

AOUTP
P
I160
c=383.224f
SUB
NW
ldr=30u
vss!
wdr=22.75u
I159
c=383.224f
ldr=30u
wdr=22.75u
AOUTP
P
I161
c=383.224f
SUB
NW
ldr=30u
vss!
wdr=22.75u

Fig 9.DICE

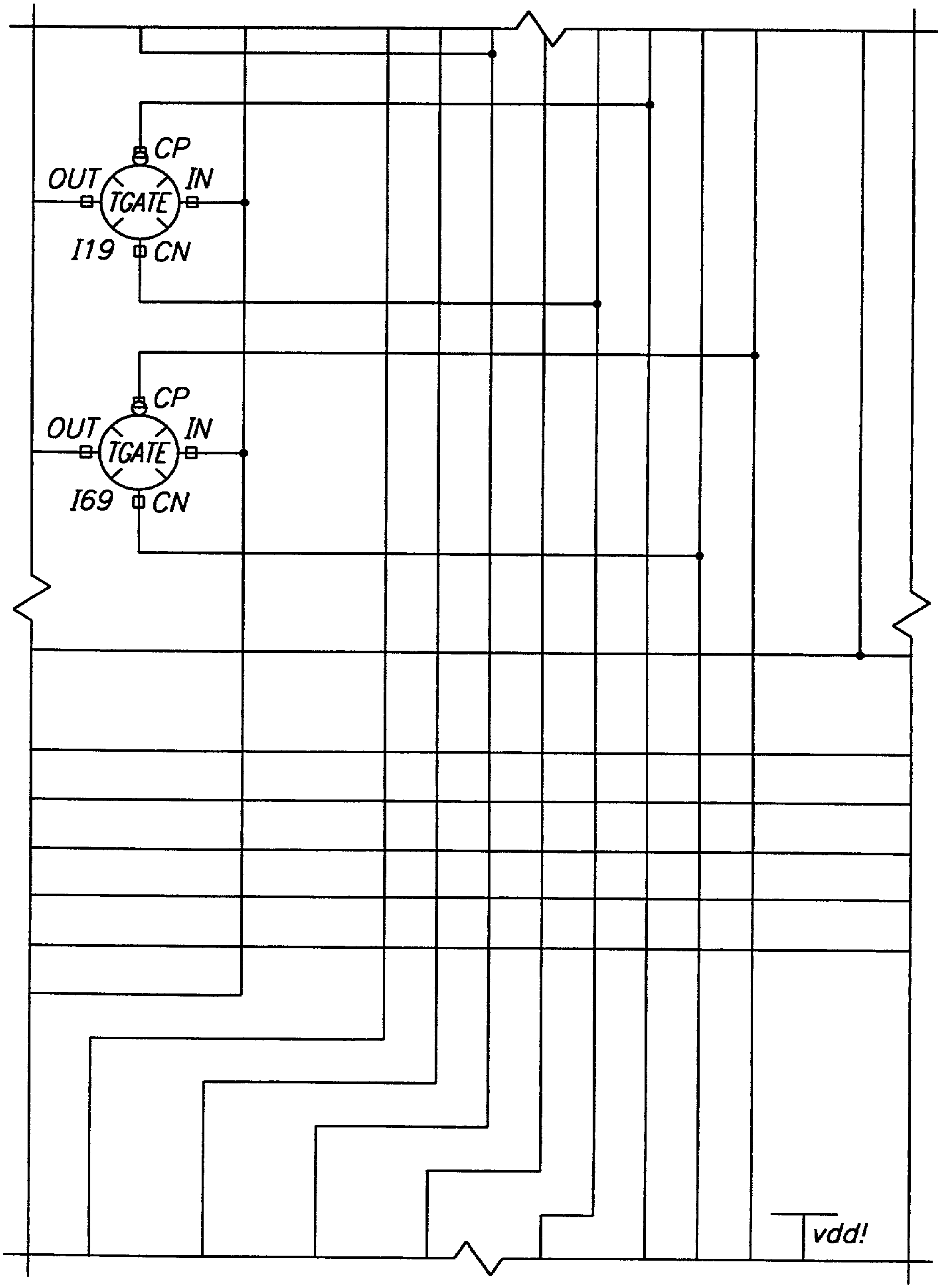


Fig 9.01CF

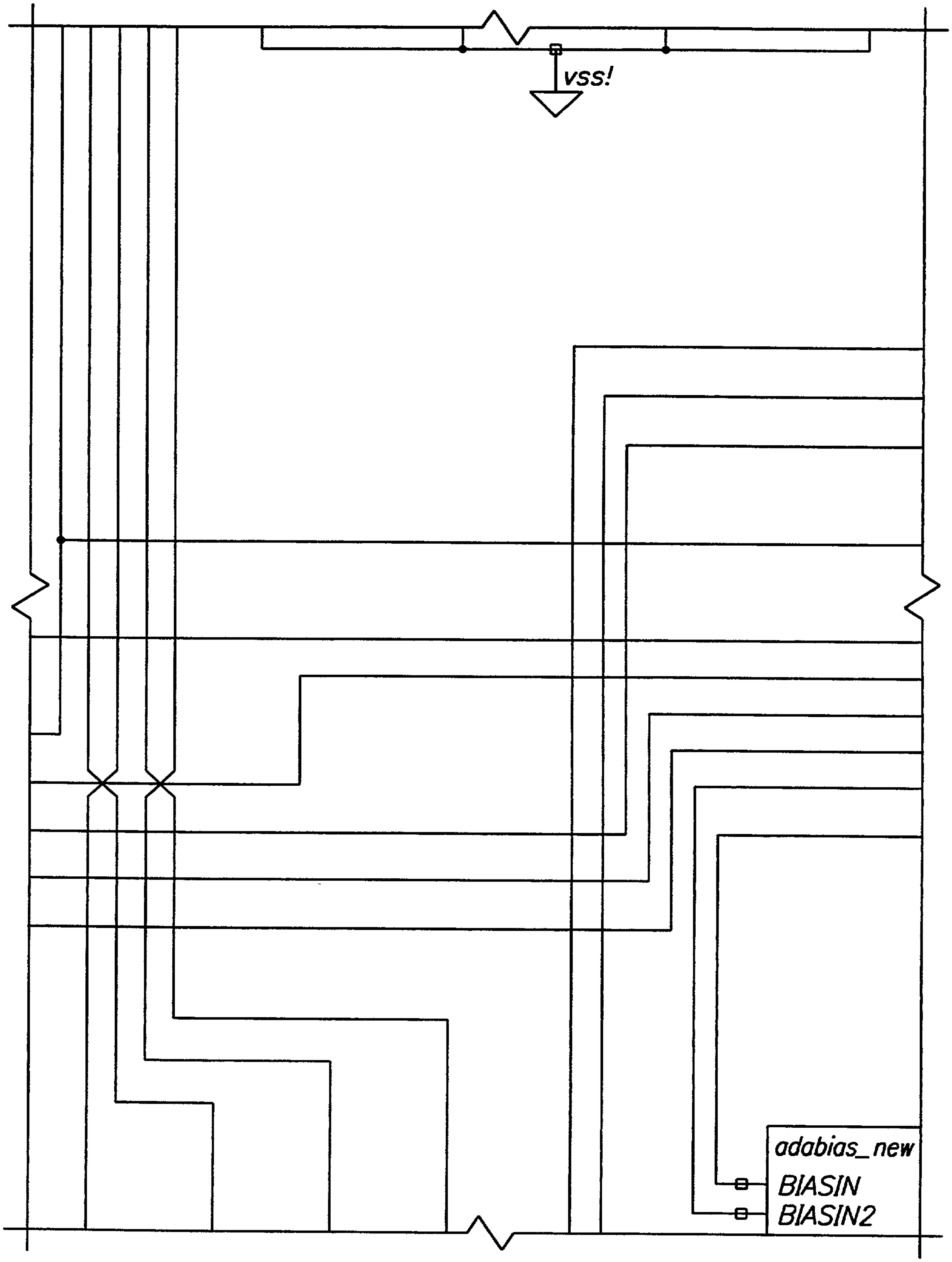


FIG 9.01CG

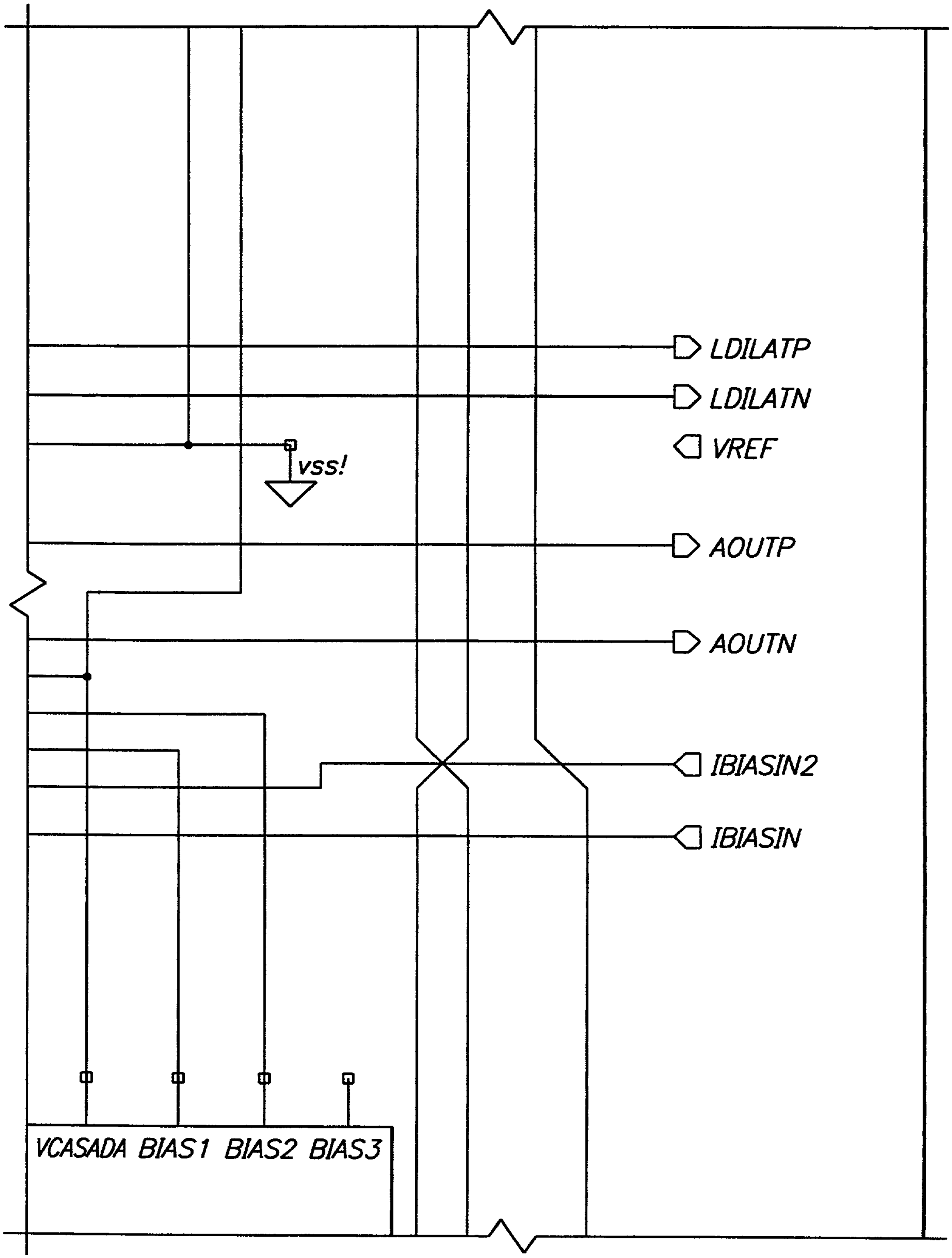

LDILATP
LDILATN
VREF
vss!
AOUTP
AOUTN
IBIASIN2
IBIASIN
VCASADA
BIAS1
BIAS2
BIAS3

Fig 9.DICH

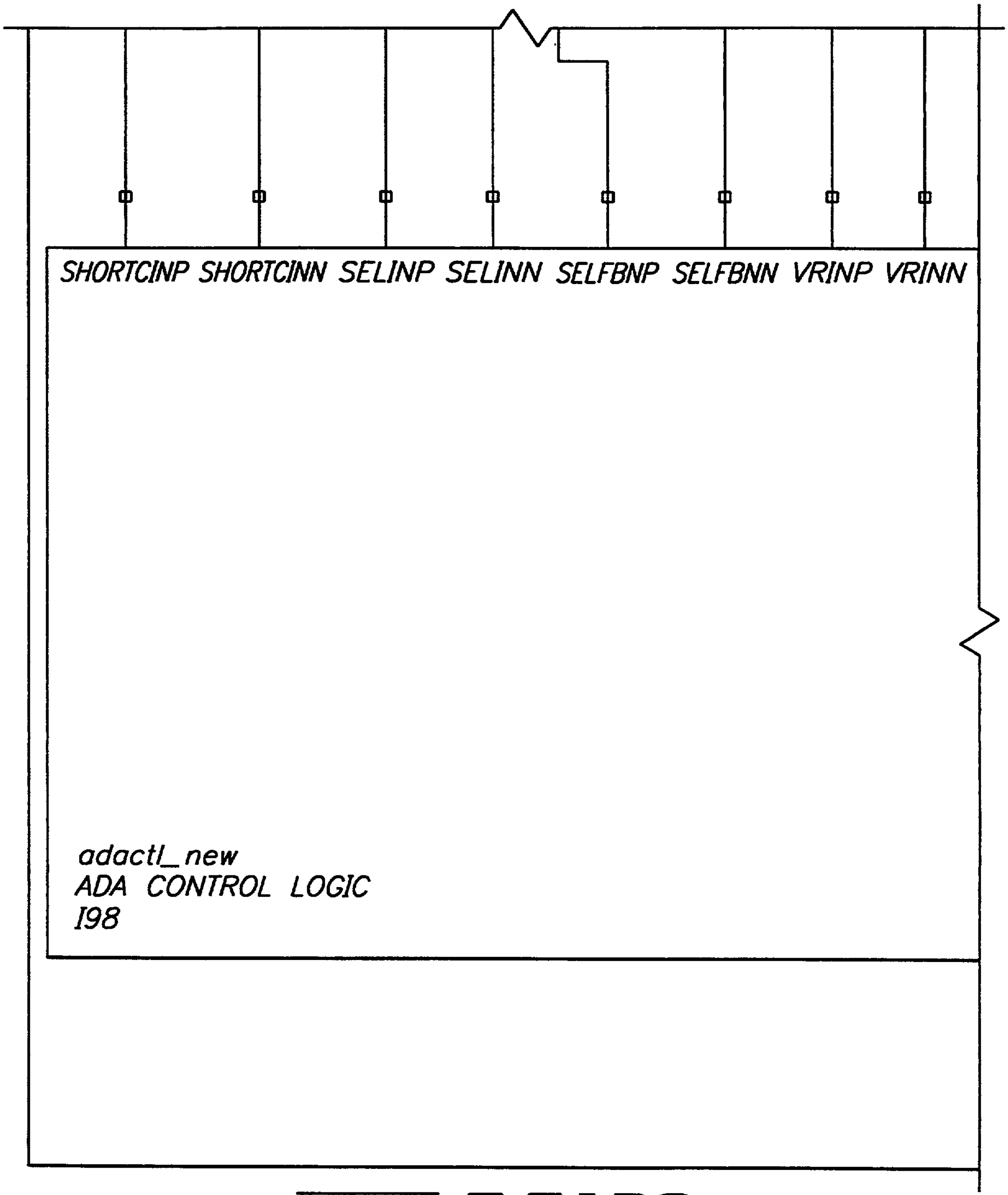

SHORTCINP
SHORTCINN
SELINP
SELINN
SELFBNP
SELFBNN
VRINP
VRINN
adactl_new
ADA CONTROL LOGIC
I98

FIG 9.01DA

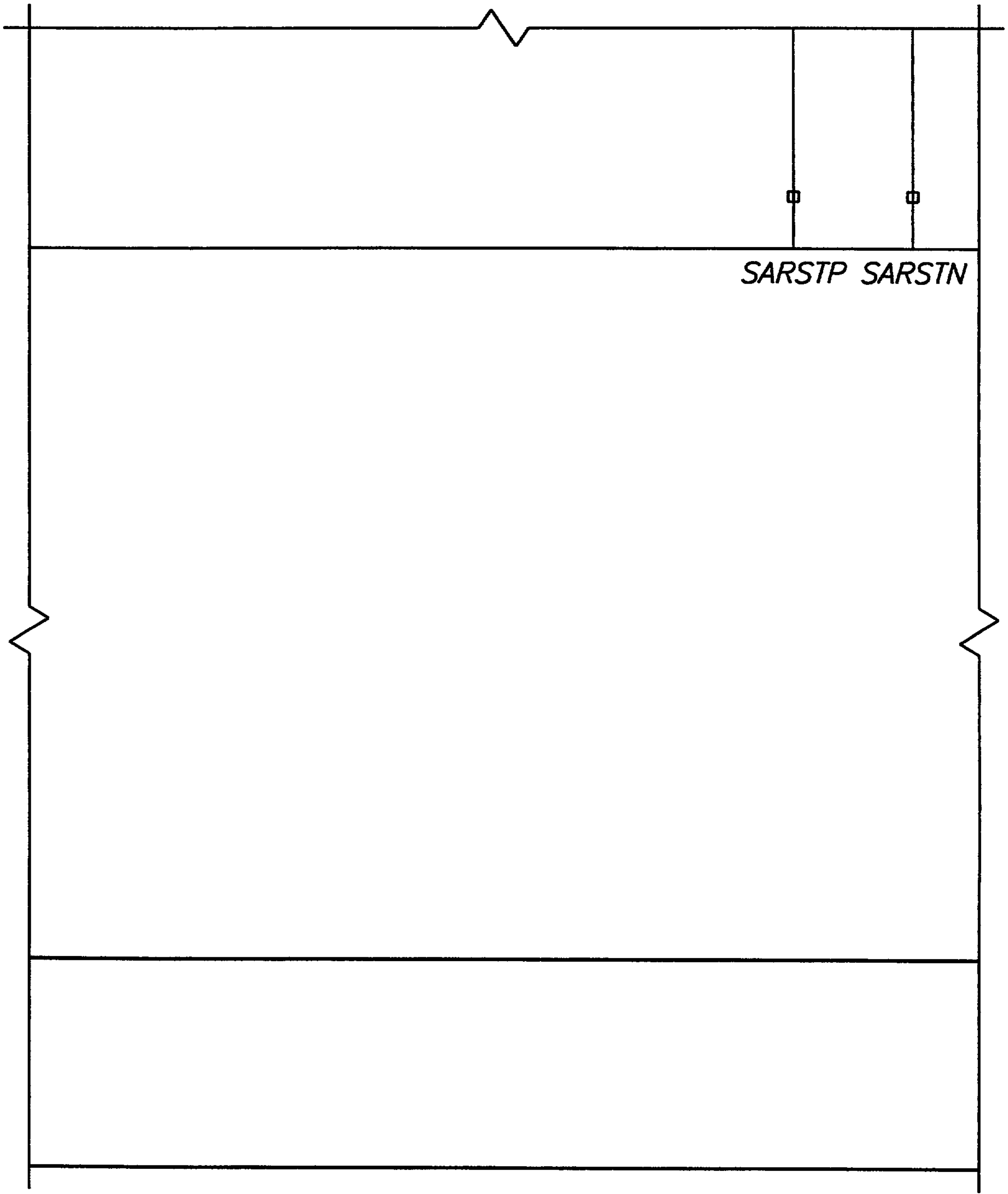


Fig 9.01DB

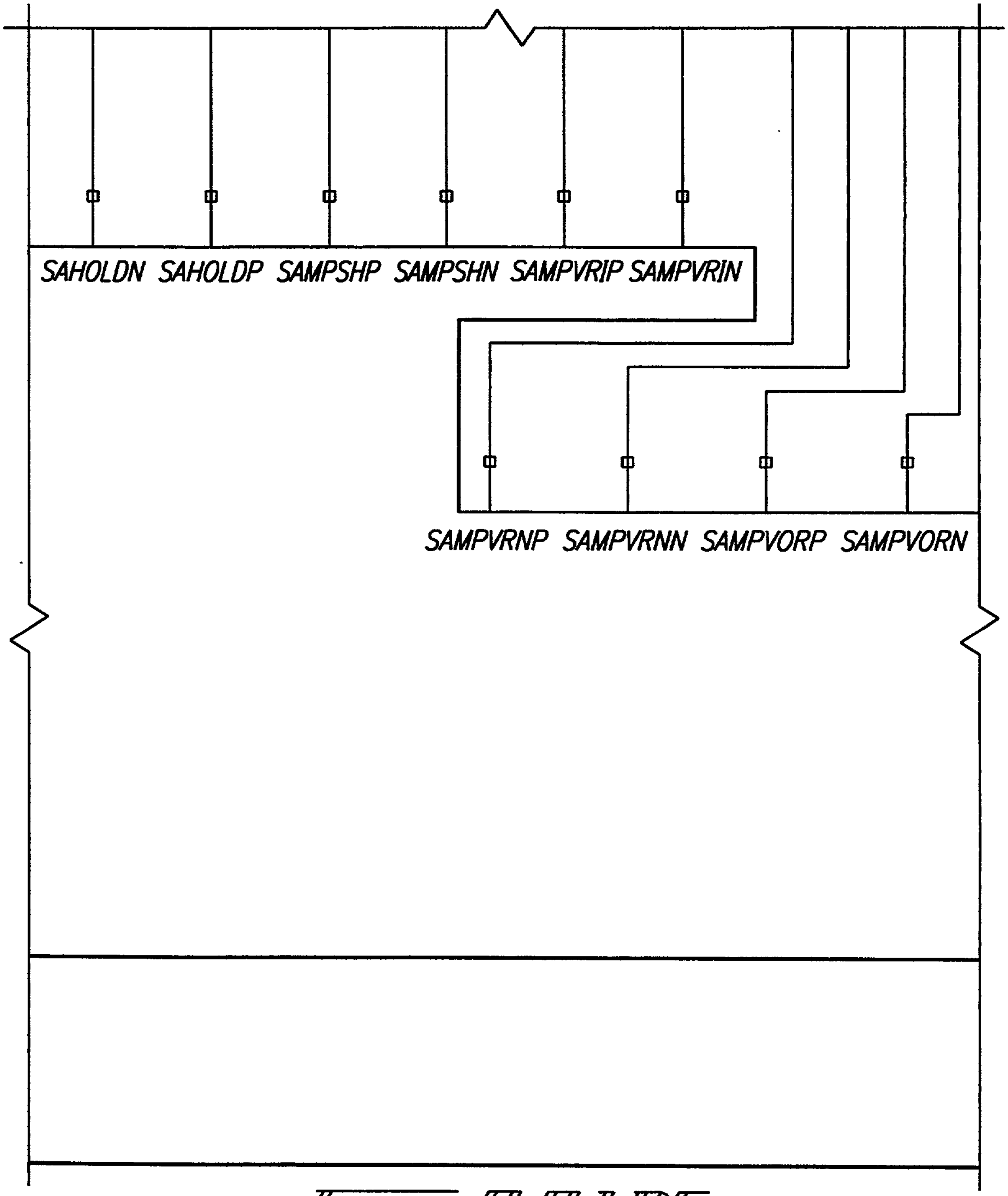

SAHOLDN
SAHOLDP
SAMPSHP
SAMPSHN
SAMPVRIP
SAMPVRIN
SAMPVRNP
SAMPVRNN
SAMPVORP
SAMPVORN

Fig 9.01DC

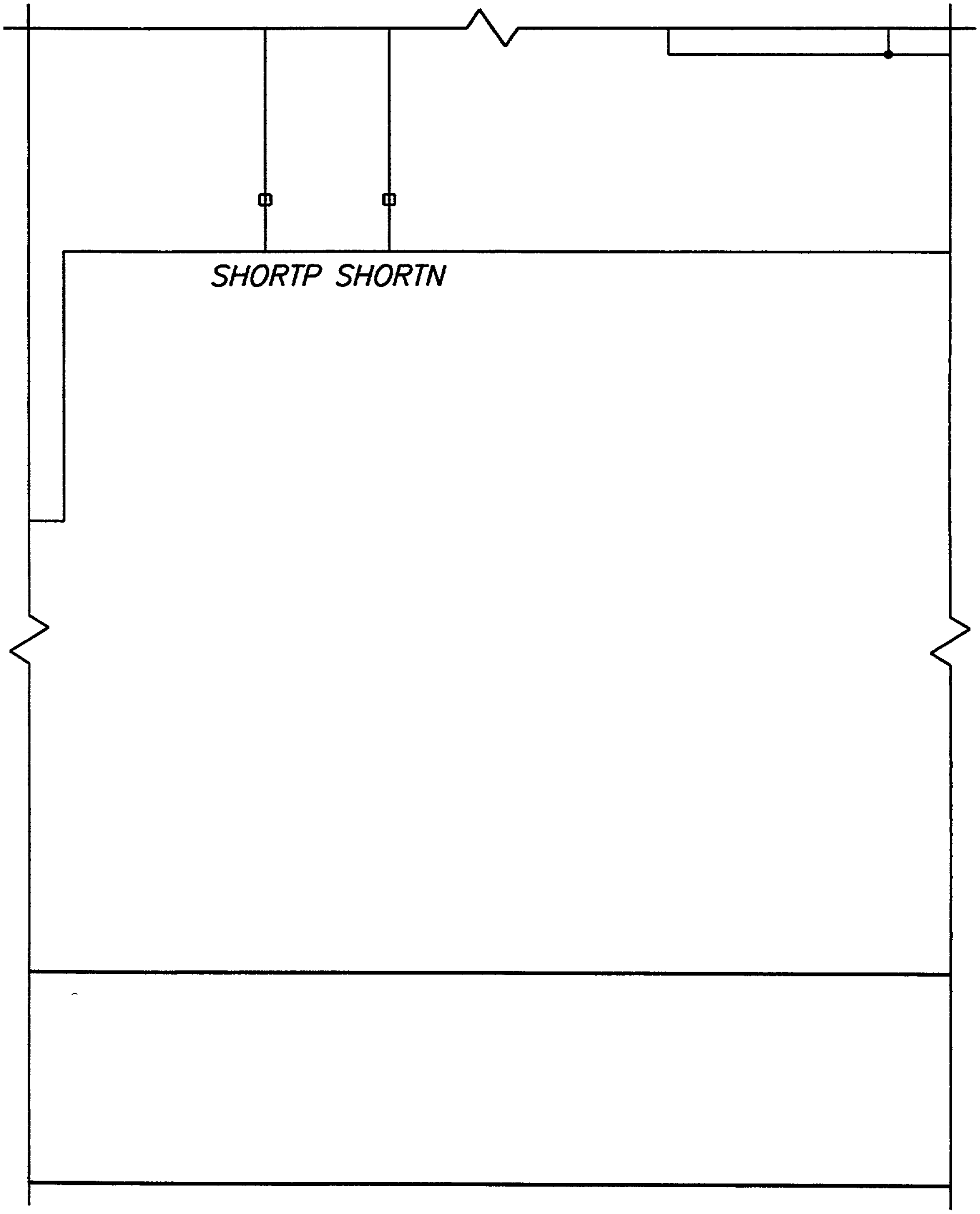


Fig 9.01DD

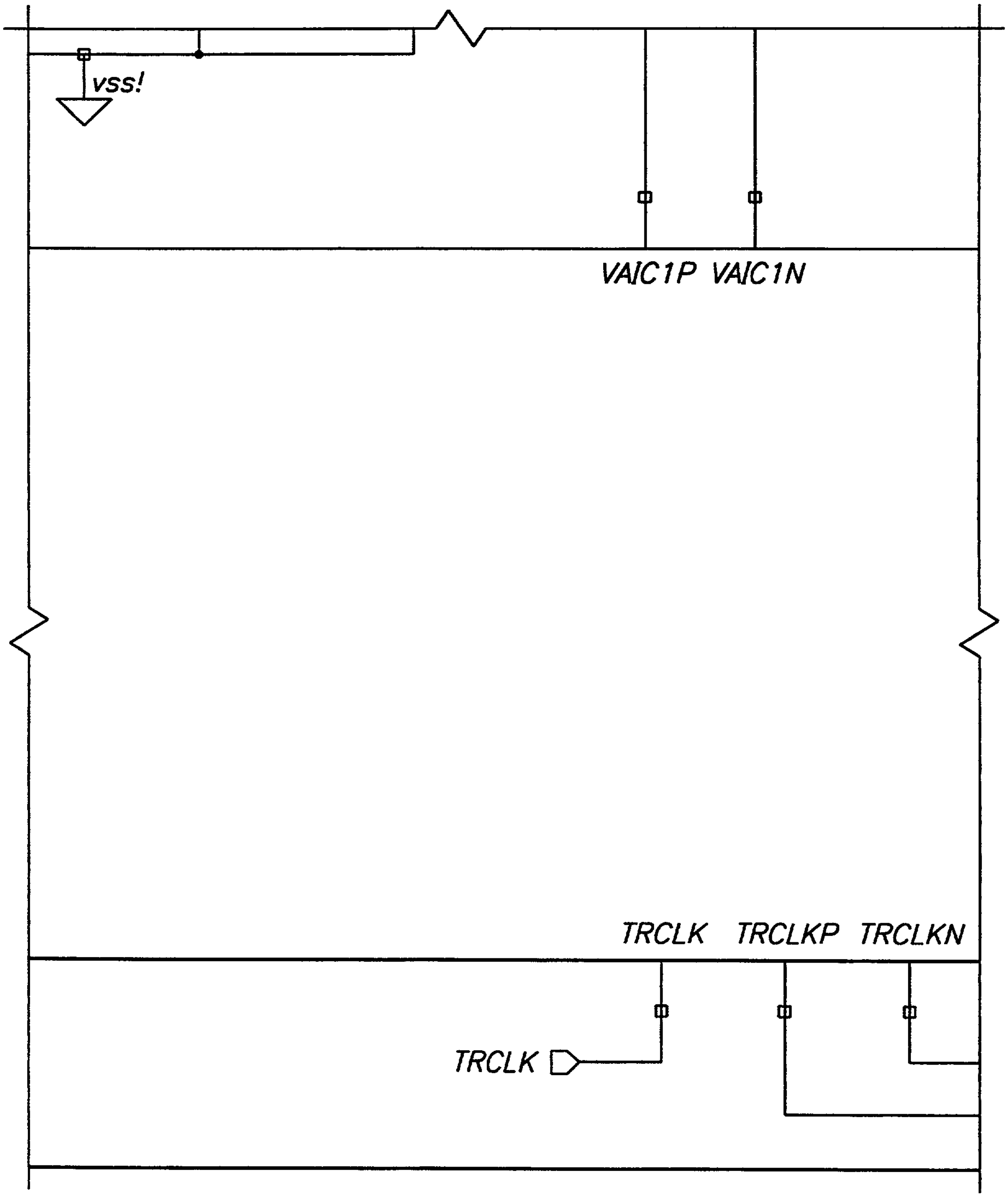


Fig 9.01DE

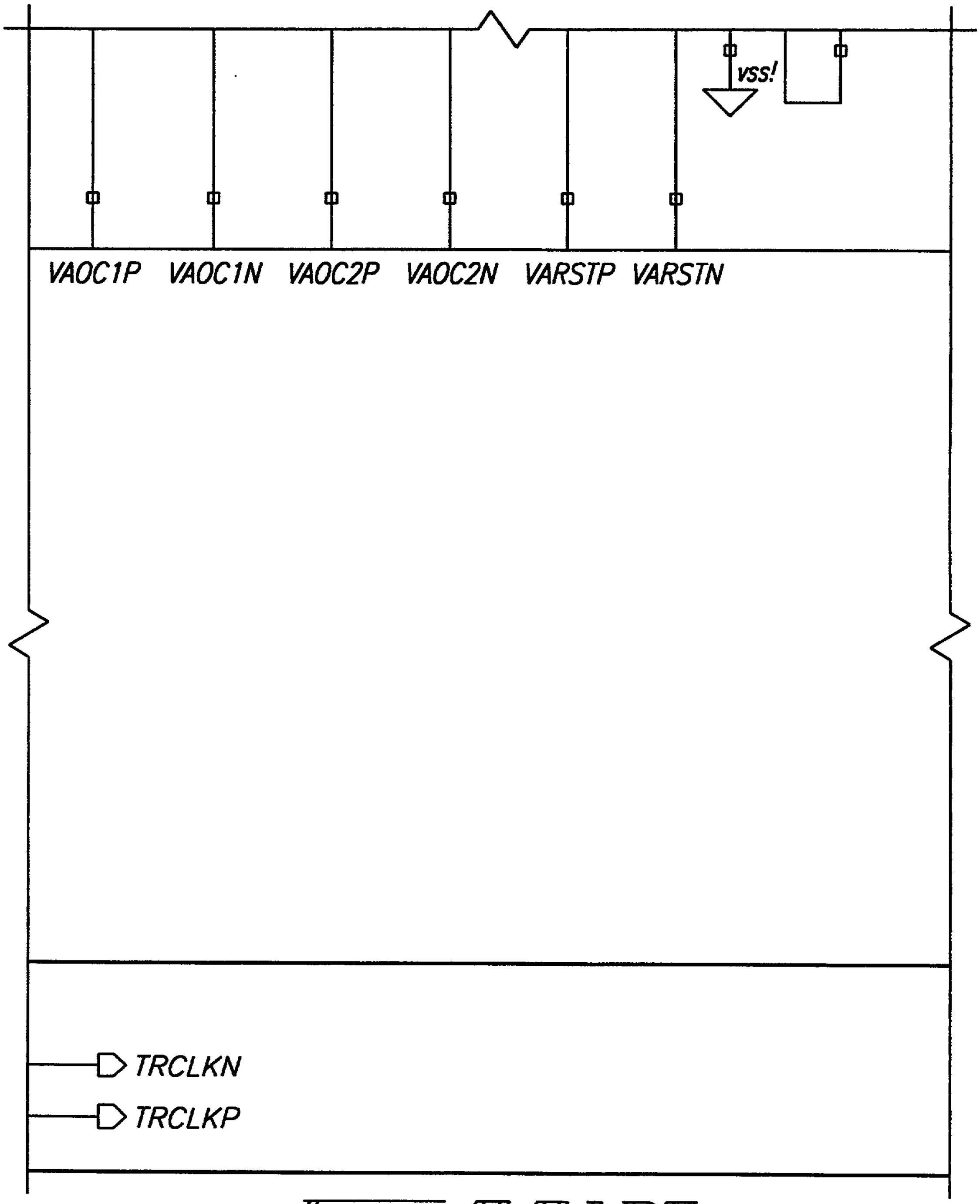

vss!
VAOC1P
VAOC1N
VAOC2P
VAOC2N
VARSTP
VARSTN
TRCLKN
TRCLKP

Fig 9.01DF

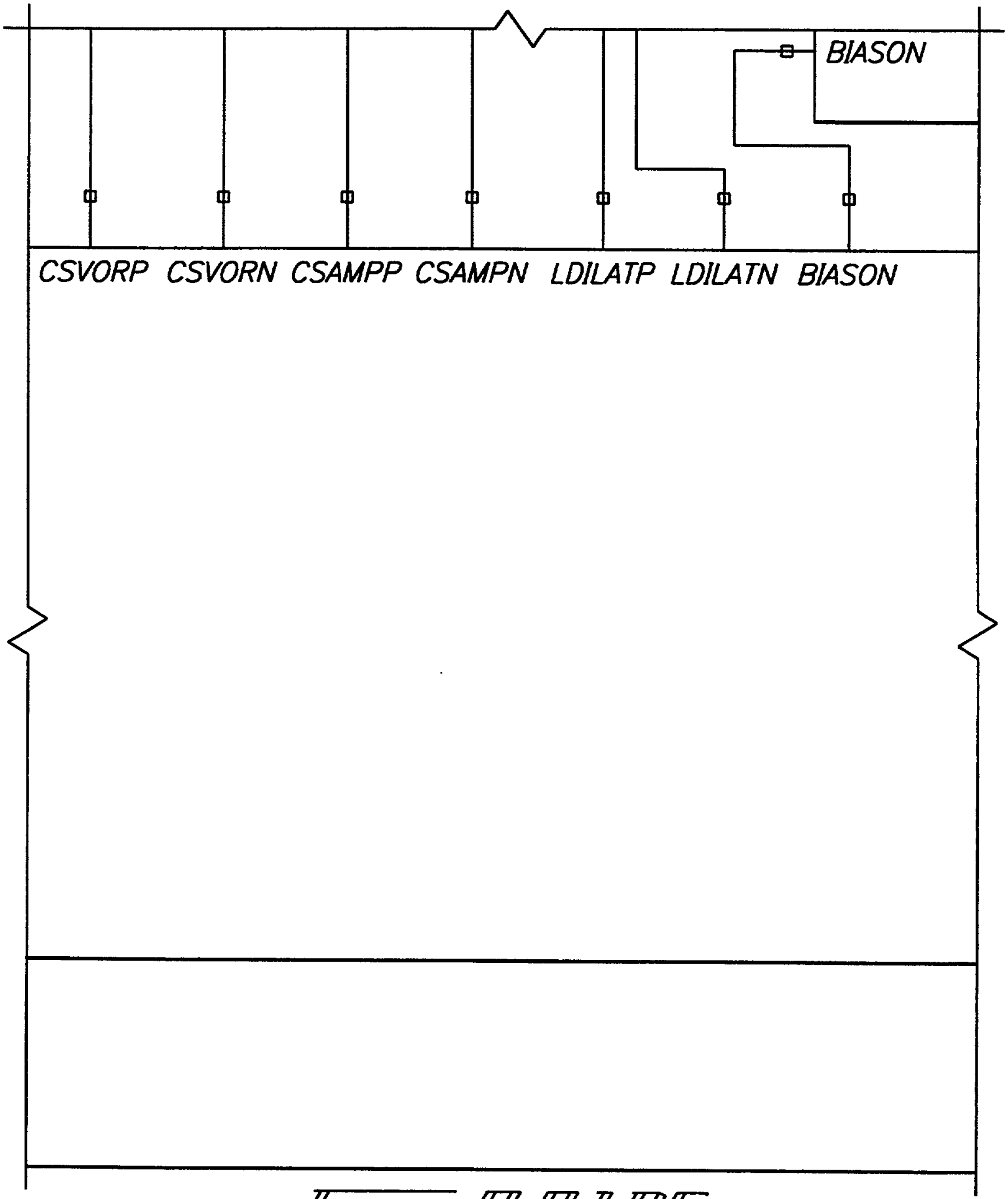

BIASON
CSVORP
CSVORN
CSAMPP
CSAMPN
LDILATP
LDILATN
BIASON

Fig 9.01DG

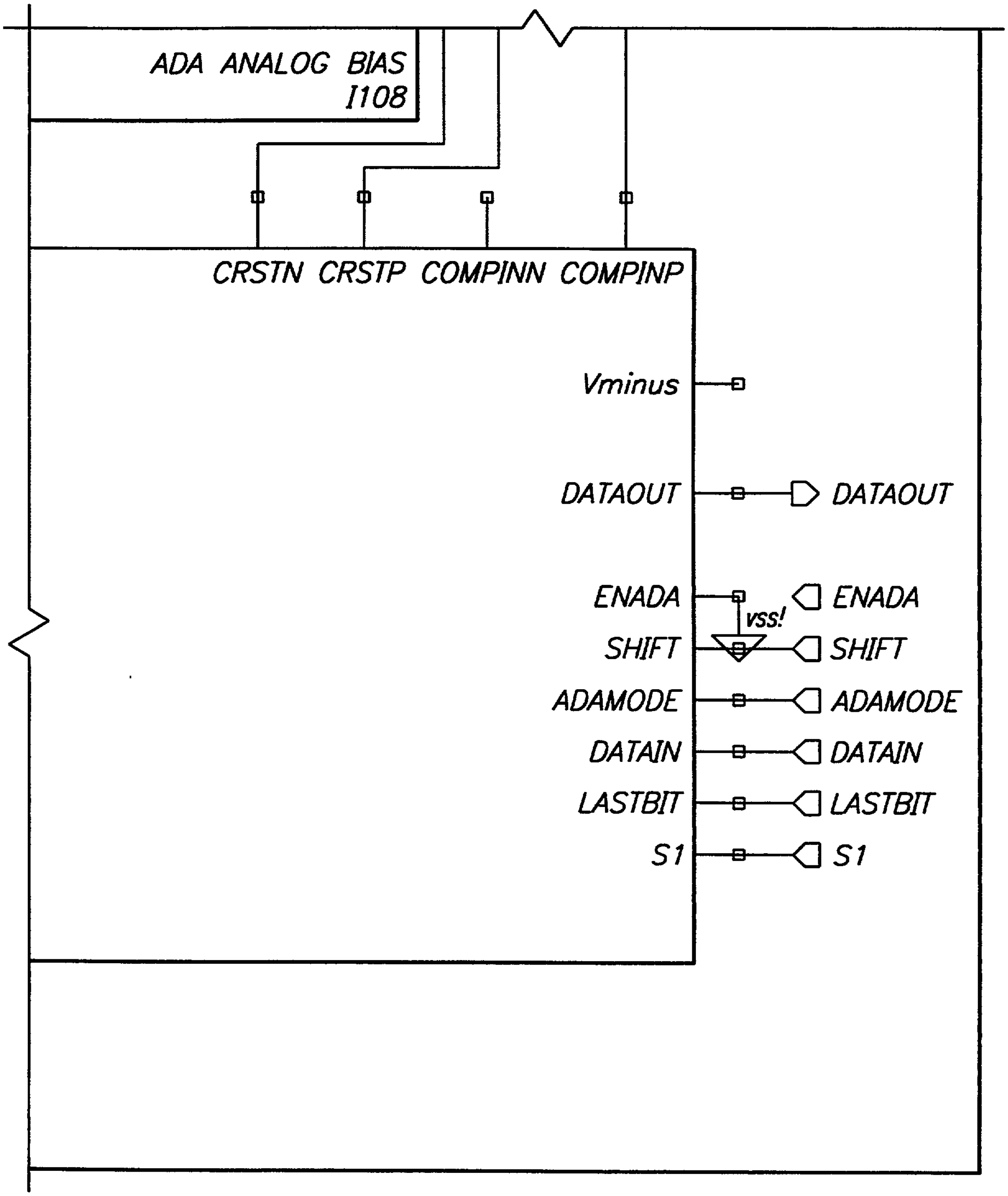

ADA ANALOG BIAS
I108
CRSTN
CRSTP
COMPINN
COMPINP
Vminus
DATAOUT
ENADA
SHIFT
ADAMODE
DATAIN
LASTBIT
S1
vss!
DATAOUT
ENADA
SHIFT
ADAMODE
DATAIN
LASTBIT
S1

Fig 9.01DH

9.0101AA	9.0101AB	9.0101AC	9.0101AD	9.0101AE	9.0101AF	9.0101AG	9.0101AH	9.0101AI	9.0101AJ	9.0101AK
9.0101BA	9.0101BB	9.0101BC	9.0101BD	9.0101BE	9.0101BF	9.0101BG	9.0101BH	9.0101BI	9.0101BJ	9.0101BK
9.0101CA	9.0101CB	9.0101CC	9.0101CD	9.0101CE	9.0101CF	9.0101CG	9.0101CH	9.0101CI	9.0101CJ	9.0101CK

Fig 9.0101

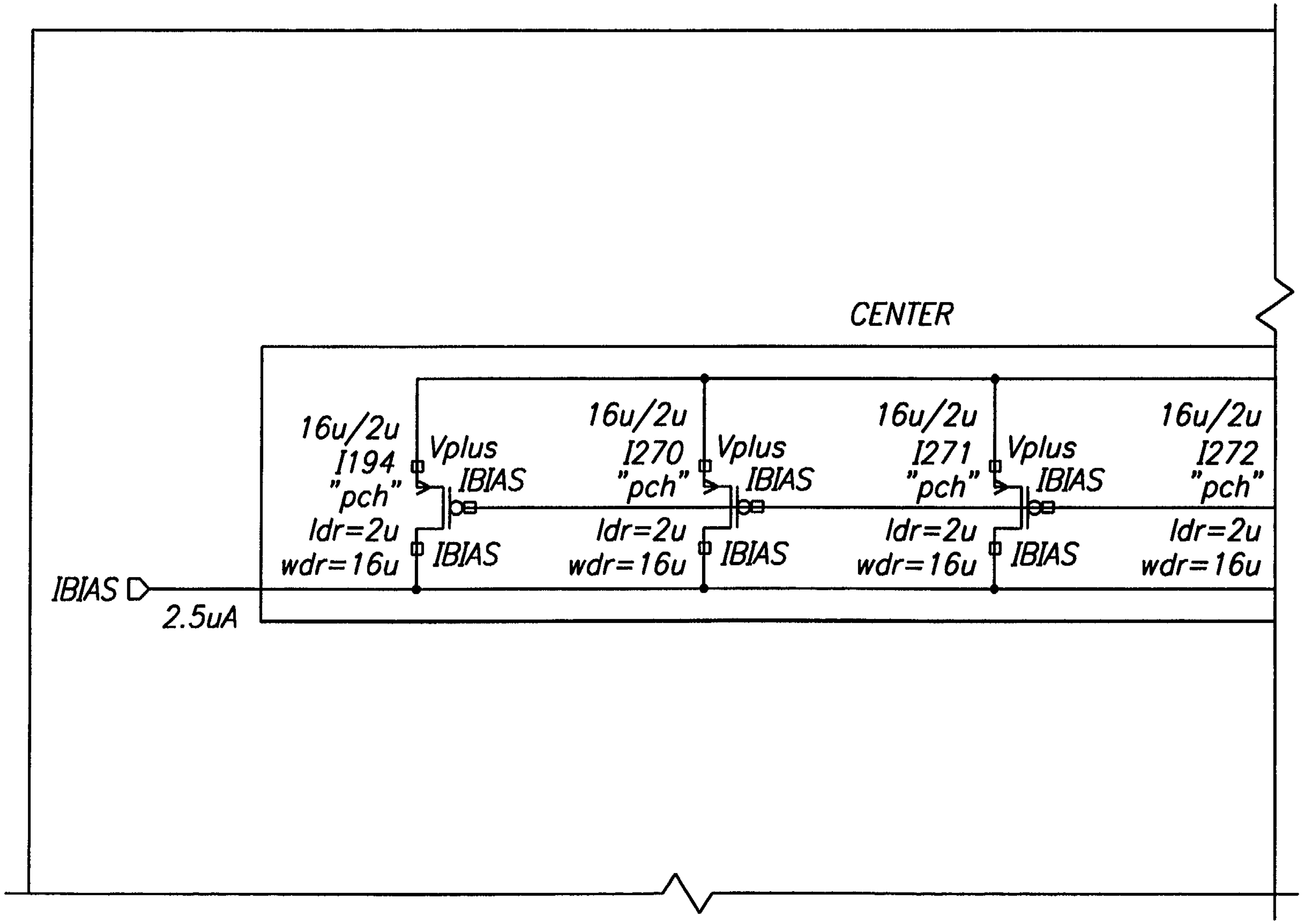

CENTER
16u/2u
I194
"pch"
ldr=2u
wdr=16u
Vplus
IBIAS
IBIAS
16u/2u
I270
"pch"
ldr=2u
wdr=16u
Vplus
IBIAS
IBIAS
16u/2u
I271
"pch"
ldr=2u
wdr=16u
Vplus
IBIAS
IBIAS
16u/2u
I272
"pch"
ldr=2u
wdr=16u
IBIAS
2.5uA

FIG 9.0101AA

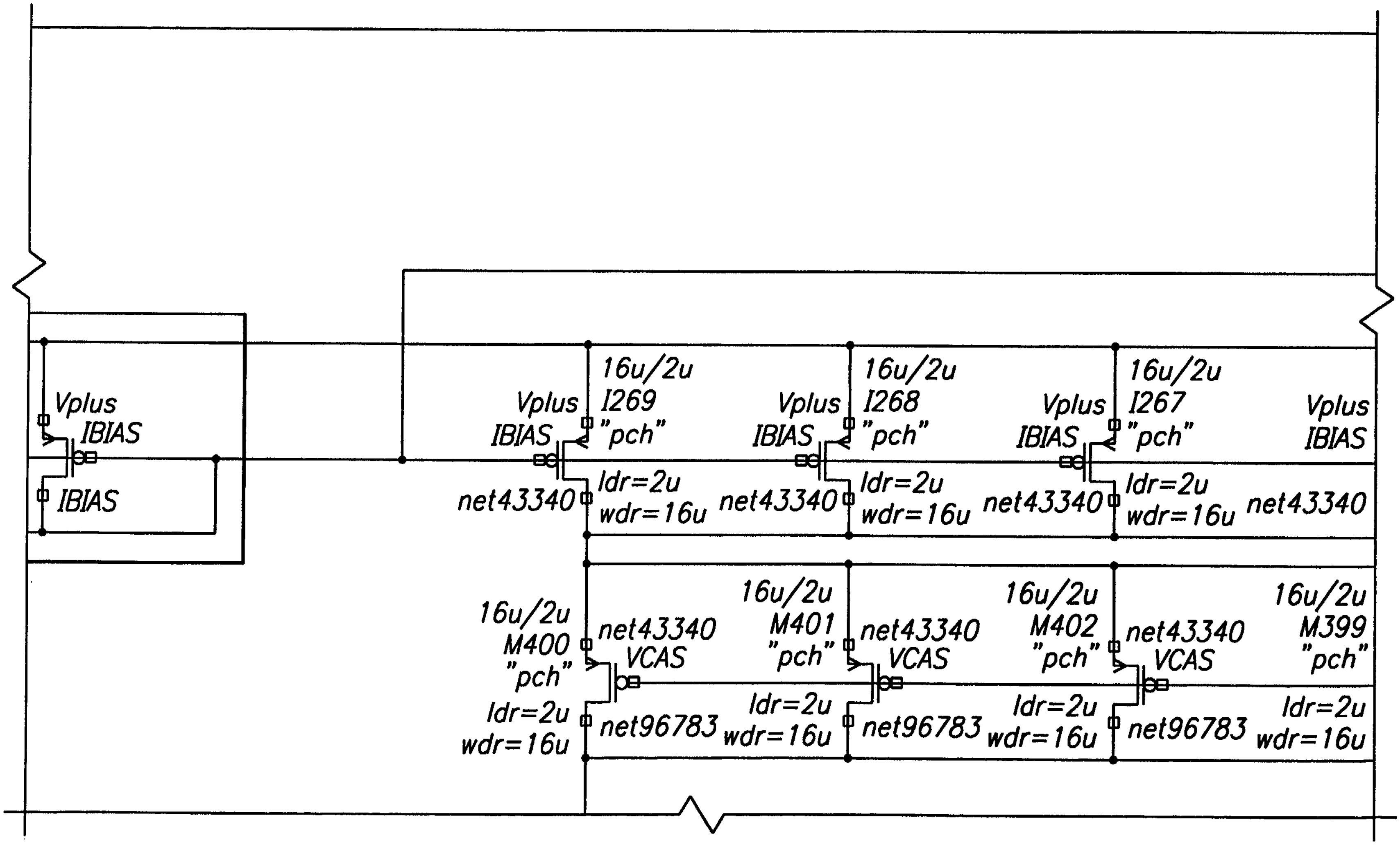

Vplus
IBIAS
IBIAS
16u/2u
I269
"pch"
Vplus
IBIAS
net43340
ldr=2u
wdr=16u
16u/2u
I268
"pch"
Vplus
IBIAS
net43340
ldr=2u
wdr=16u
16u/2u
I267
"pch"
Vplus
IBIAS
net43340
ldr=2u
wdr=16u
Vplus
IBIAS
net43340
16u/2u
M400
"pch"
ldr=2u
wdr=16u
net43340
VCAS
net96783
16u/2u
M401
"pch"
ldr=2u
wdr=16u
net43340
VCAS
net96783
16u/2u
M402
"pch"
ldr=2u
wdr=16u
net43340
VCAS
net96783
16u/2u
M399
"pch"
ldr=2u
wdr=16u

Fig 9.0101AB

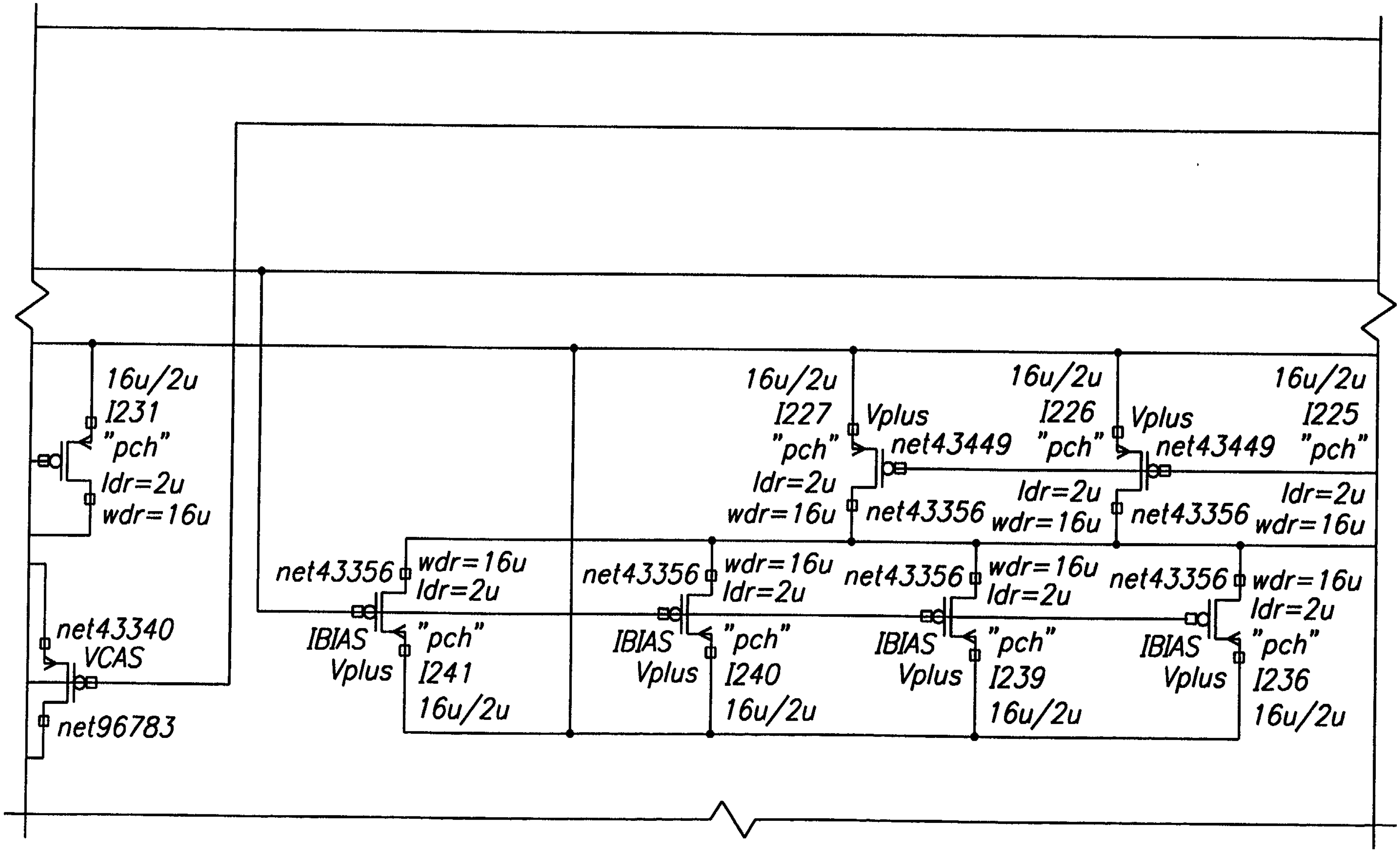

16u/2u
I231
"pch"
ldr=2u
wdr=16u
net43340
VCAS
net96783
net43356
wdr=16u
ldr=2u
IBIAS
Vplus
"pch"
I241
16u/2u
net43356
wdr=16u
ldr=2u
IBIAS
Vplus
"pch"
I240
16u/2u
16u/2u
I227
"pch"
ldr=2u
wdr=16u
Vplus
net43449
net43356
net43356
wdr=16u
ldr=2u
IBIAS
Vplus
"pch"
I239
16u/2u
16u/2u
I226
"pch"
ldr=2u
wdr=16u
Vplus
net43449
net43356
net43356
wdr=16u
ldr=2u
IBIAS
Vplus
"pch"
I236
16u/2u
16u/2u
I225
"pch"
ldr=2u
wdr=16u

Fig 9.0101AC

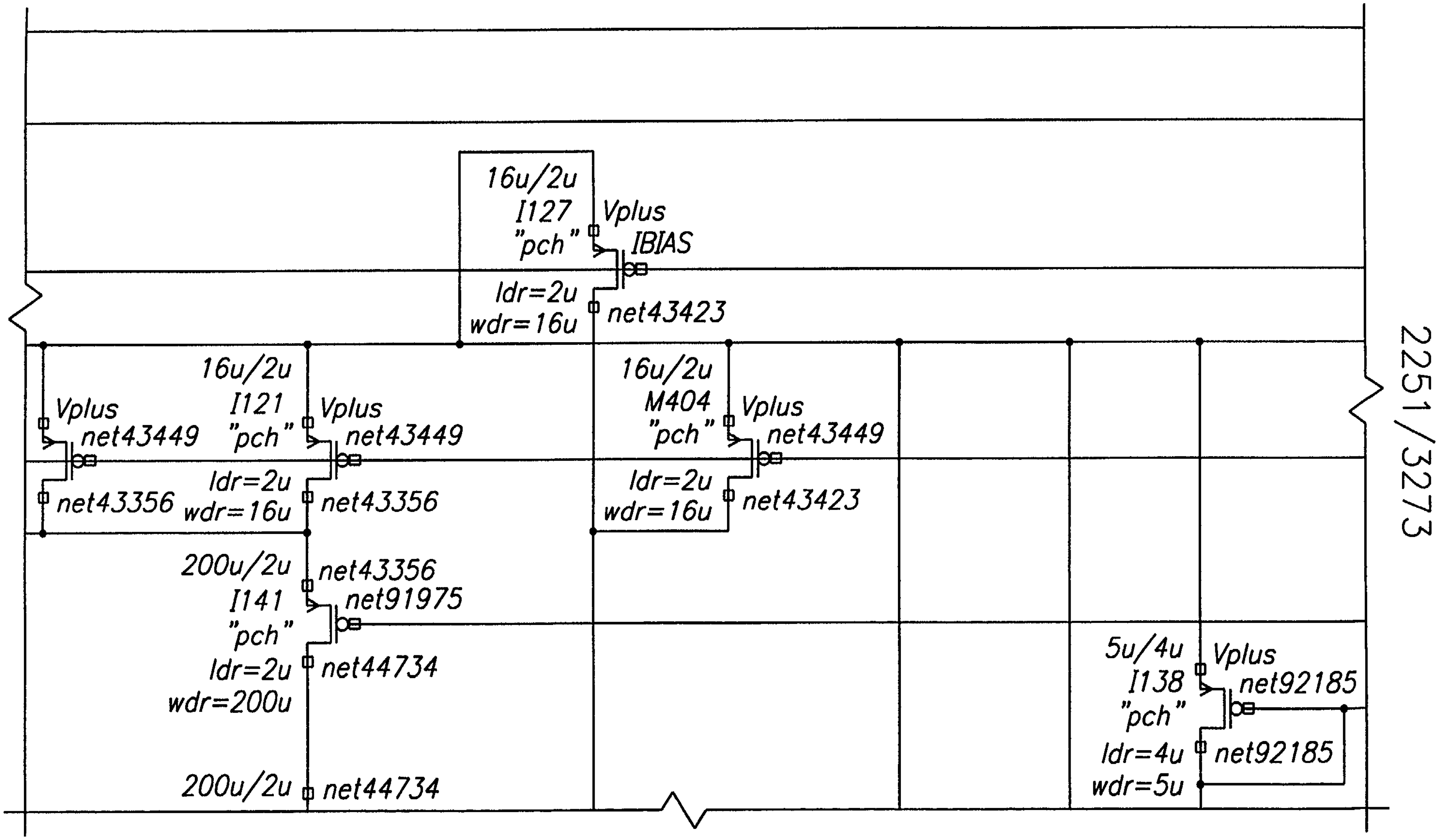

16u/2u
I127
"pch"
Vplus
IBIAS
ldr=2u
wdr=16u
net43423
Vplus
net43449
net43356
16u/2u
I121
"pch"
Vplus
net43449
ldr=2u
wdr=16u
net43356
16u/2u
M404
"pch"
Vplus
net43449
ldr=2u
wdr=16u
net43423
200u/2u
I141
"pch"
net43356
net91975
ldr=2u
wdr=200u
net44734
200u/2u
net44734
5u/4u
I138
"pch"
Vplus
net92185
ldr=4u
wdr=5u
net92185
2251/3273

Fig 9.0101AD

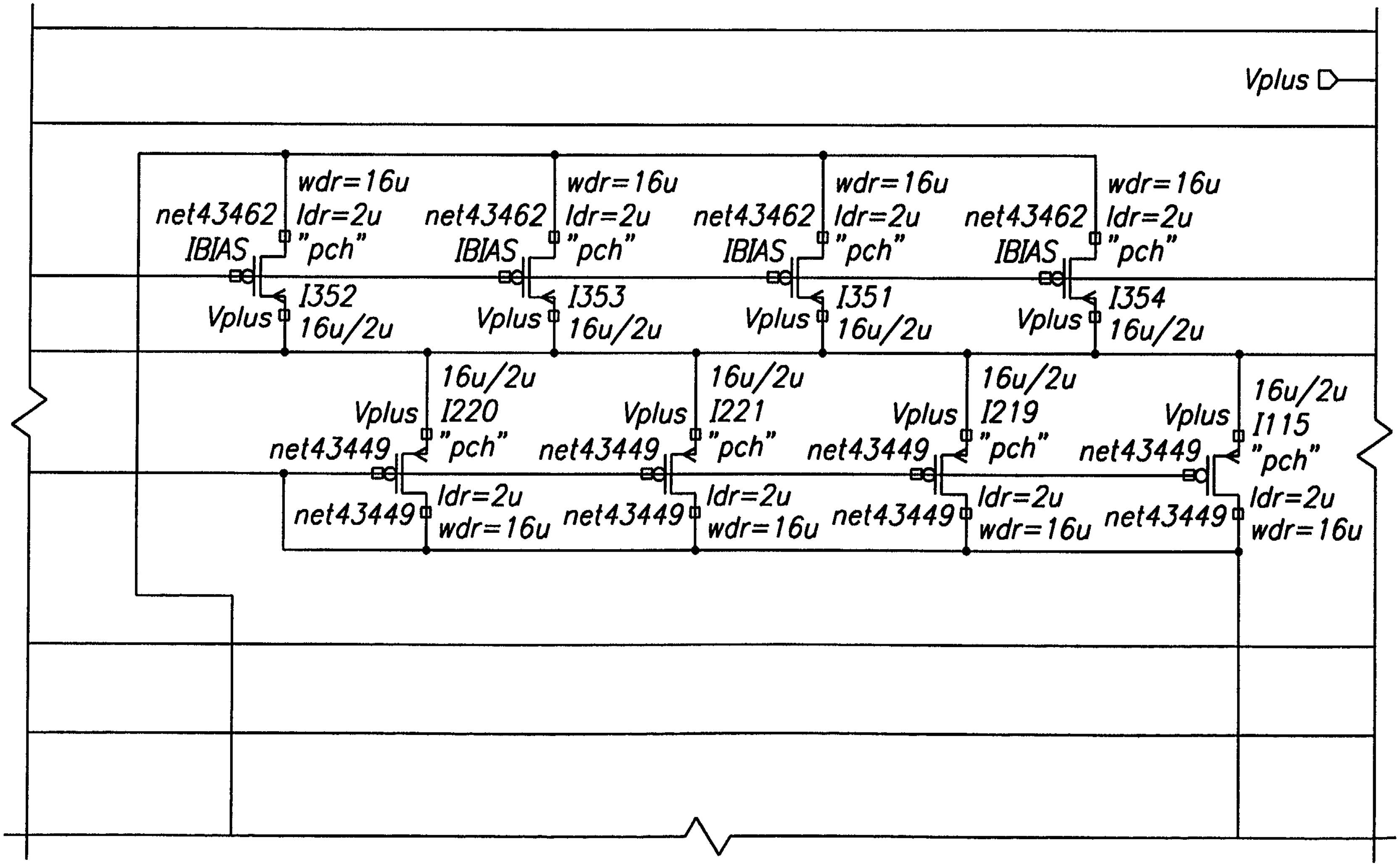

Vplus
net43462
IBIAS
wdr=16u
ldr=2u
"pch"
I352
I353
I351
I354
Vplus
16u/2u
I220
I221
I219
I115
net43449
ldr=2u
wdr=16u

FIG 9.0101AE

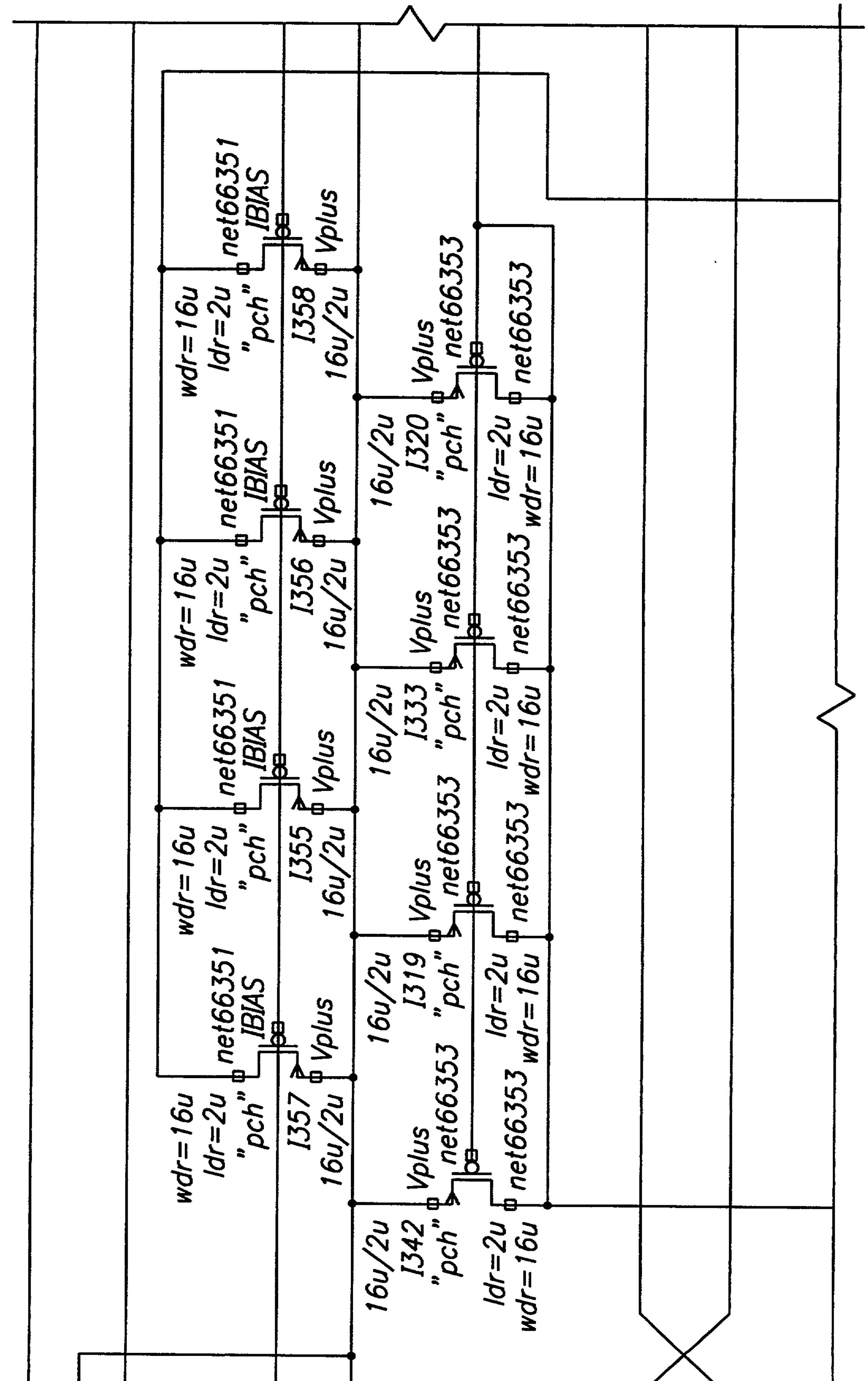

net66351
IBIAS
Vplus
wdr=16u
ldr=2u
"pch"
I358
16u/2u
I356
I355
I357
Vplus
net66353
I320
I333
I319
I342
wdr=16u
ldr=2u
"pch"
16u/2u

FIG 9.01AF

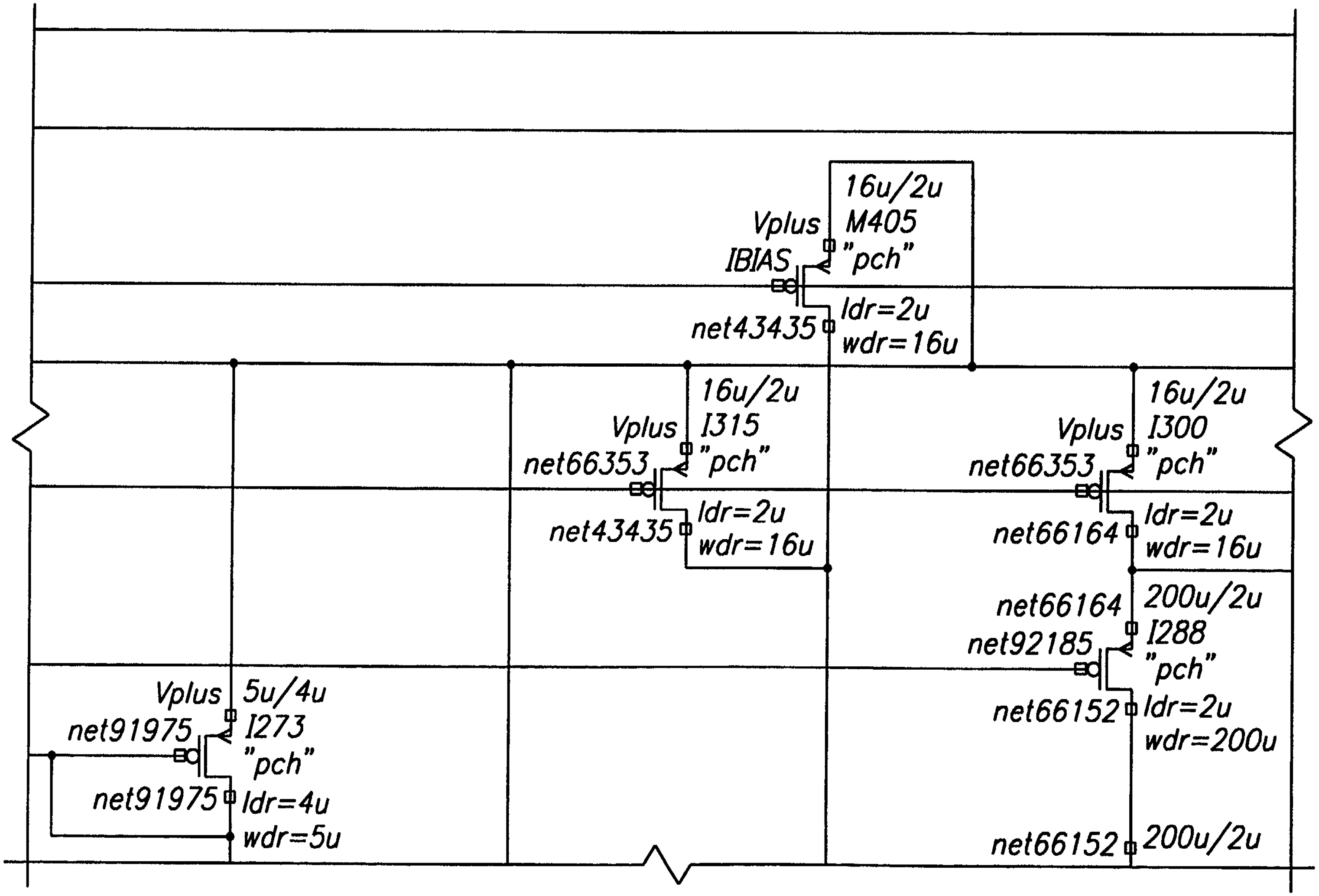

Vplus
16u/2u
M405
"pch"
IBIAS
net43435
ldr=2u
wdr=16u
Vplus
16u/2u
I315
"pch"
net66353
net43435
ldr=2u
wdr=16u
Vplus
16u/2u
I300
"pch"
net66353
net66164
ldr=2u
wdr=16u
net66164
200u/2u
I288
net92185
"pch"
net66152
ldr=2u
wdr=200u
net66152
200u/2u
Vplus
5u/4u
net91975
I273
"pch"
net91975
ldr=4u
wdr=5u

Fig 9.0101AG

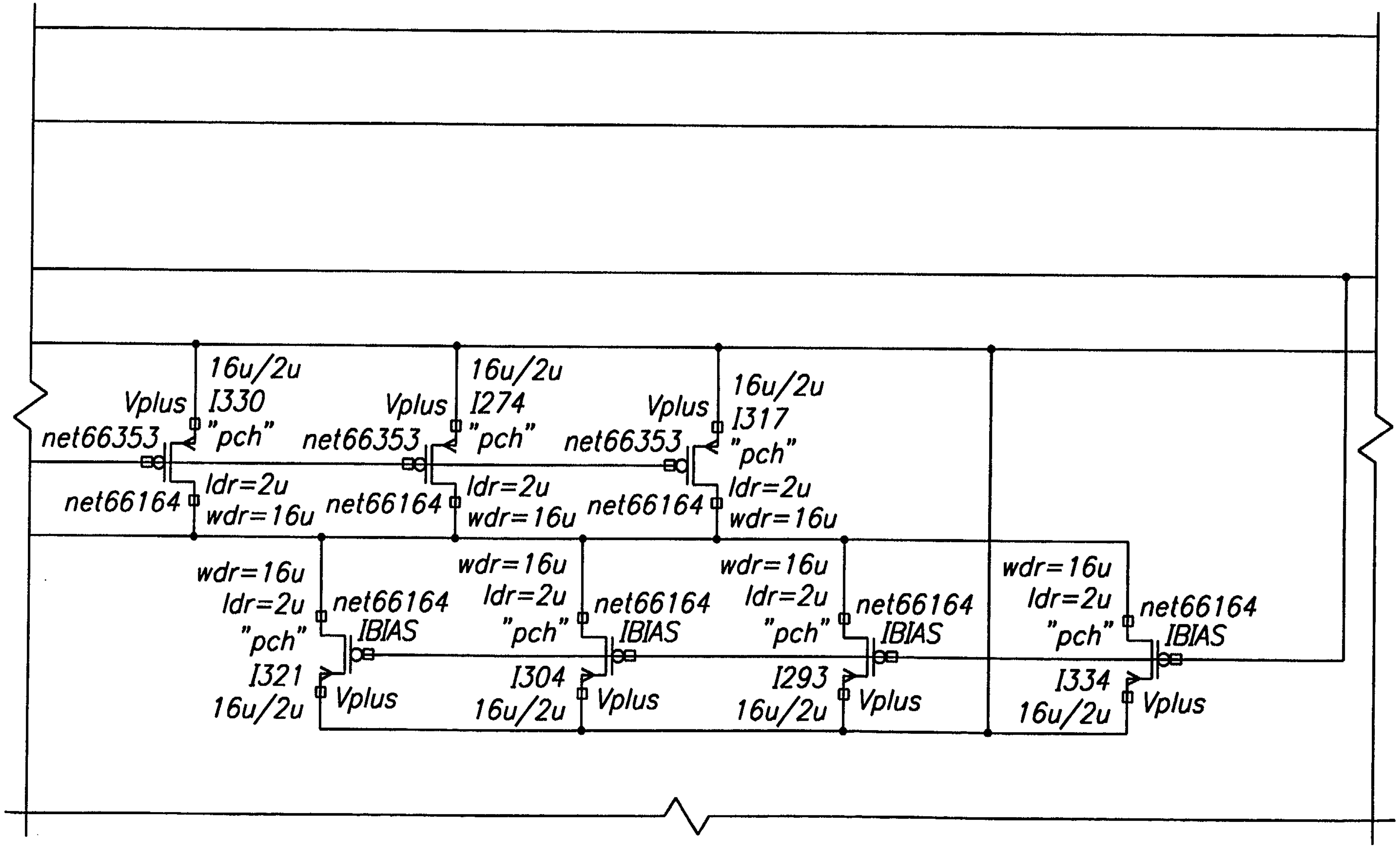

16u/2u
Vplus
I330
net66353
"pch"
ldr=2u
net66164
wdr=16u
16u/2u
Vplus
I274
net66353
"pch"
ldr=2u
net66164
wdr=16u
16u/2u
Vplus
I317
net66353
"pch"
ldr=2u
net66164
wdr=16u
wdr=16u
ldr=2u
net66164
"pch"
IBIAS
I321
16u/2u
Vplus
wdr=16u
ldr=2u
net66164
"pch"
IBIAS
I304
16u/2u
Vplus
wdr=16u
ldr=2u
net66164
"pch"
IBIAS
I293
16u/2u
Vplus
wdr=16u
ldr=2u
net66164
"pch"
IBIAS
I334
16u/2u
Vplus

Fig 9.0101AH

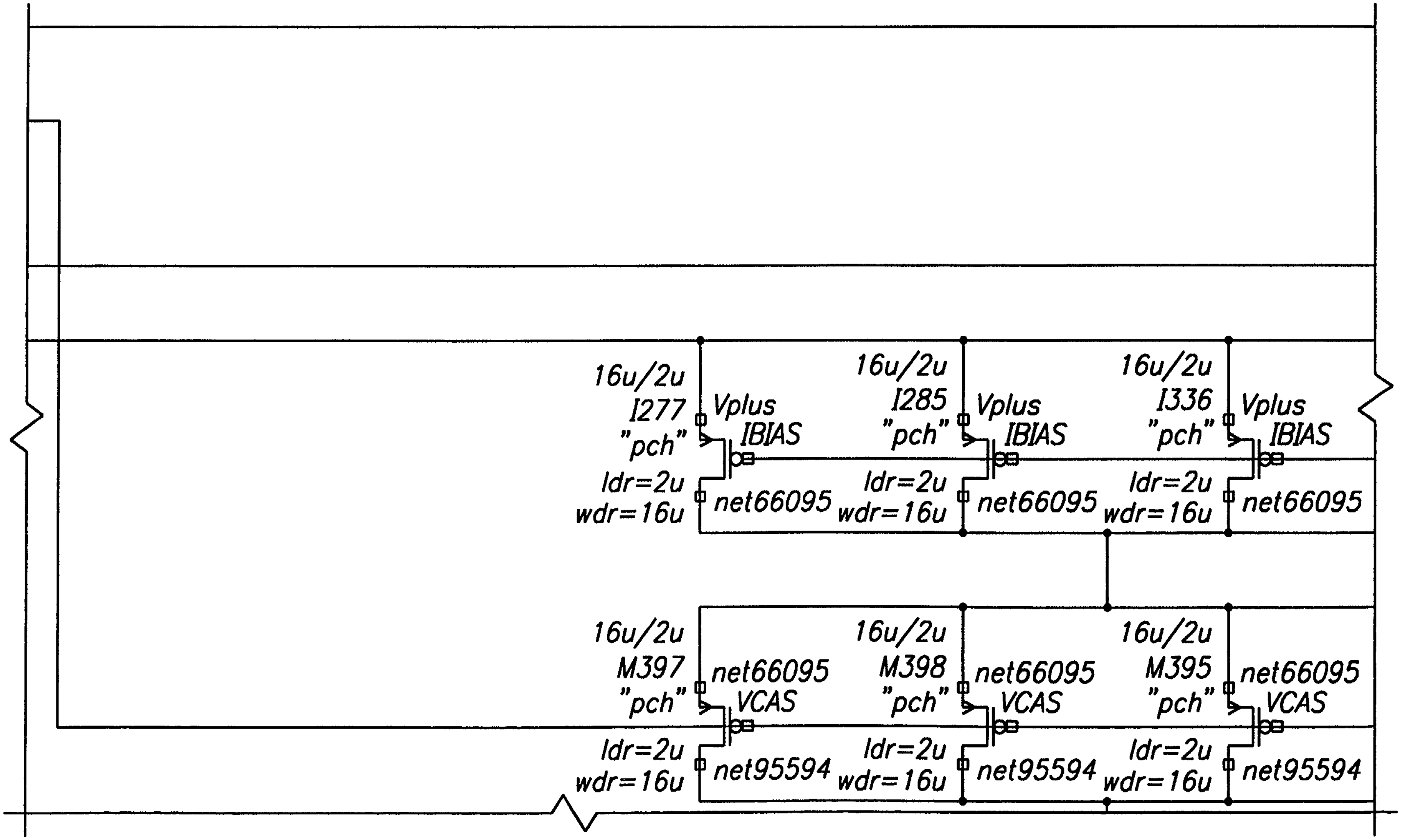

16u/2u
I277
"pch"
ldr=2u
wdr=16u
Vplus
IBIAS
net66095
16u/2u
I285
"pch"
ldr=2u
wdr=16u
Vplus
IBIAS
net66095
16u/2u
I336
"pch"
ldr=2u
wdr=16u
Vplus
IBIAS
net66095
16u/2u
M397
"pch"
ldr=2u
wdr=16u
net66095
VCAS
net95594
16u/2u
M398
"pch"
ldr=2u
wdr=16u
net66095
VCAS
net95594
16u/2u
M395
"pch"
ldr=2u
wdr=16u
net66095
VCAS
net95594

Fig 9.0101A1

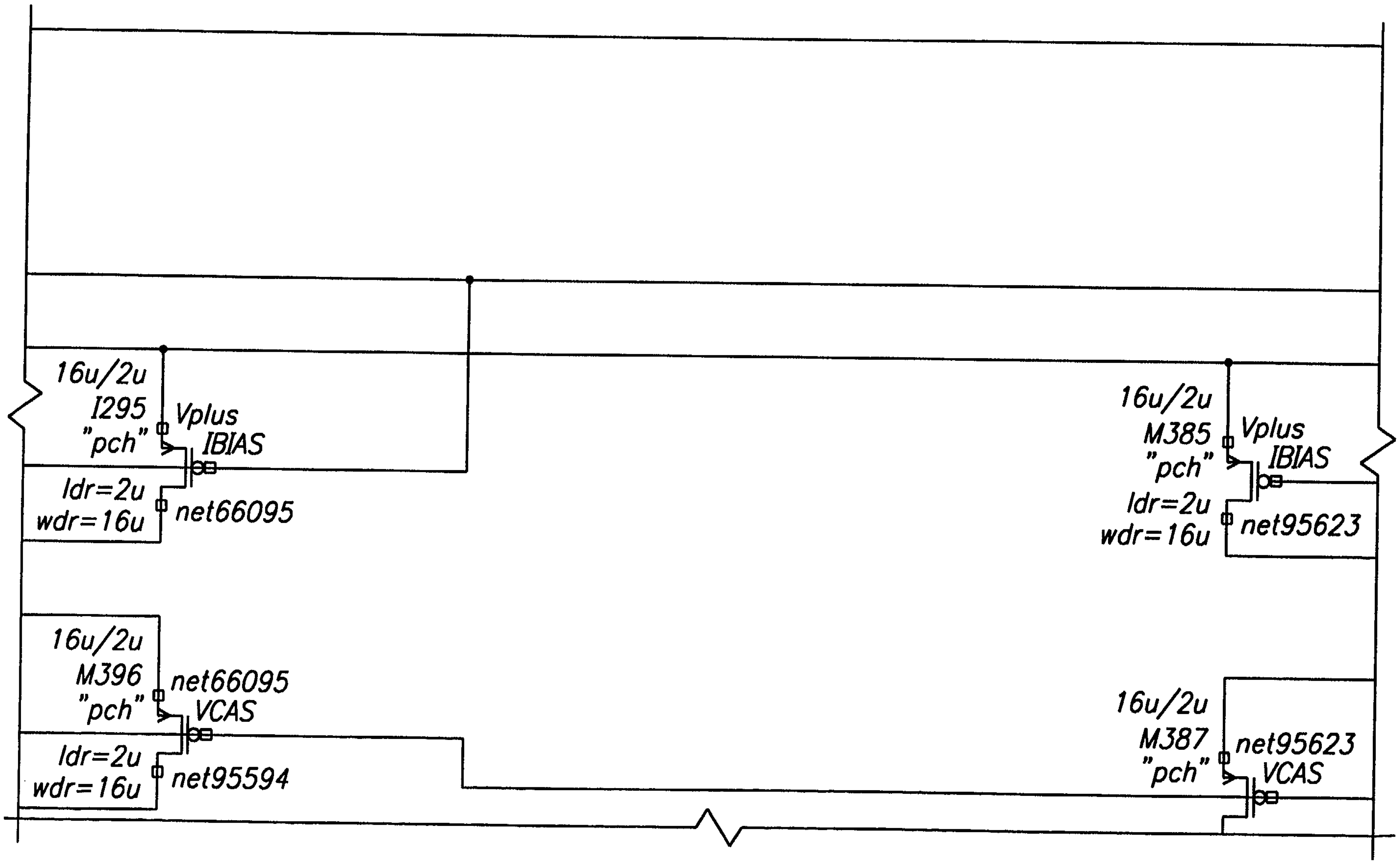

16u/2u
I295
"pch"
Vplus
IBIAS
ldr=2u
wdr=16u
net66095
16u/2u
M396
"pch"
net66095
VCAS
ldr=2u
wdr=16u
net95594
16u/2u
M385
"pch"
Vplus
IBIAS
ldr=2u
wdr=16u
net95623
16u/2u
M387
"pch"
net95623
VCAS

Fig 9.0101Ad

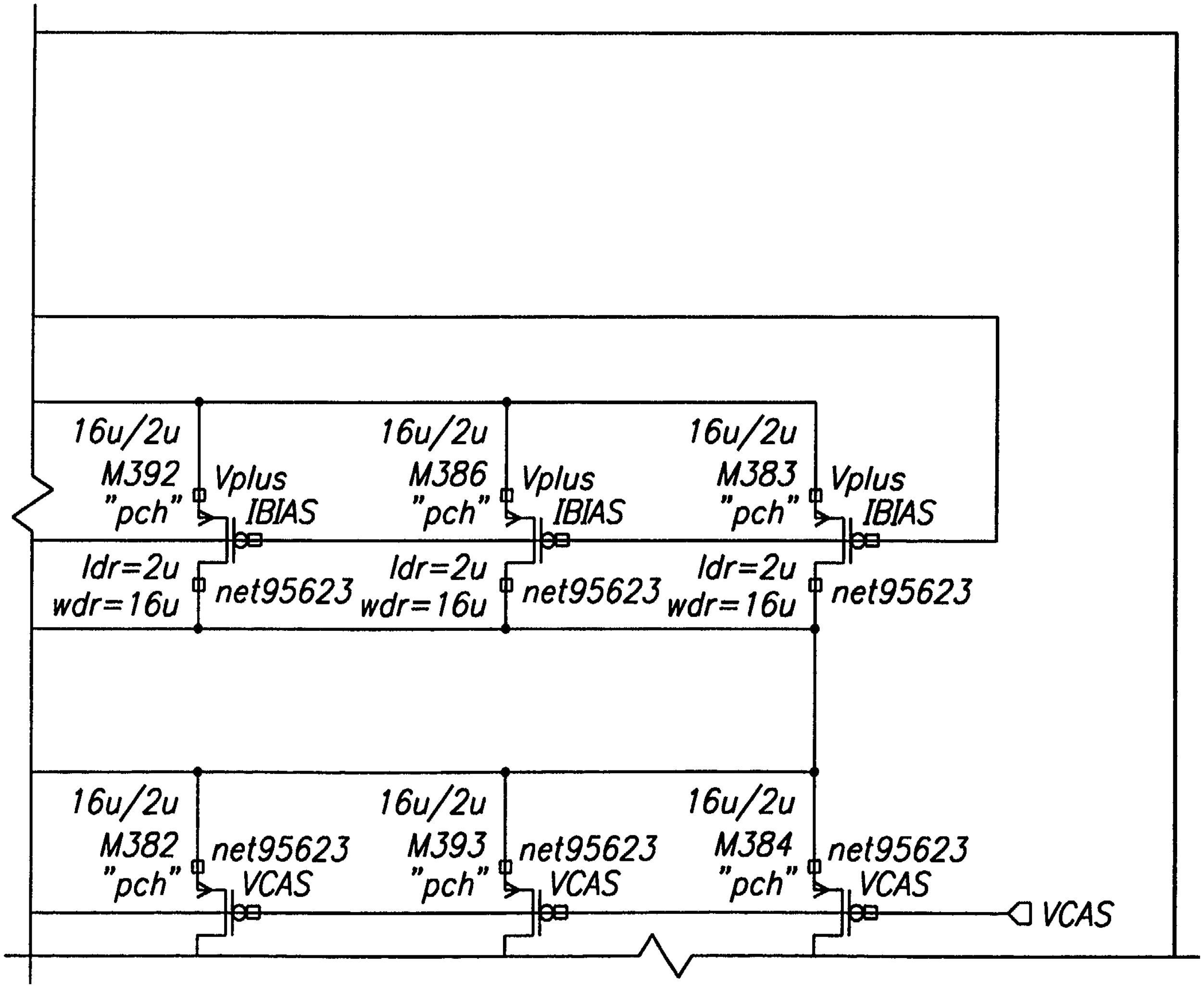

16u/2u
M392
"pch"
Vplus
IBIAS
ldr=2u
wdr=16u
net95623
16u/2u
M386
"pch"
Vplus
IBIAS
ldr=2u
wdr=16u
net95623
16u/2u
M383
"pch"
Vplus
IBIAS
ldr=2u
wdr=16u
net95623
16u/2u
M382
"pch"
net95623
VCAS
16u/2u
M393
"pch"
net95623
VCAS
16u/2u
M384
"pch"
net95623
VCAS
VCAS

FIG 9.0101AK

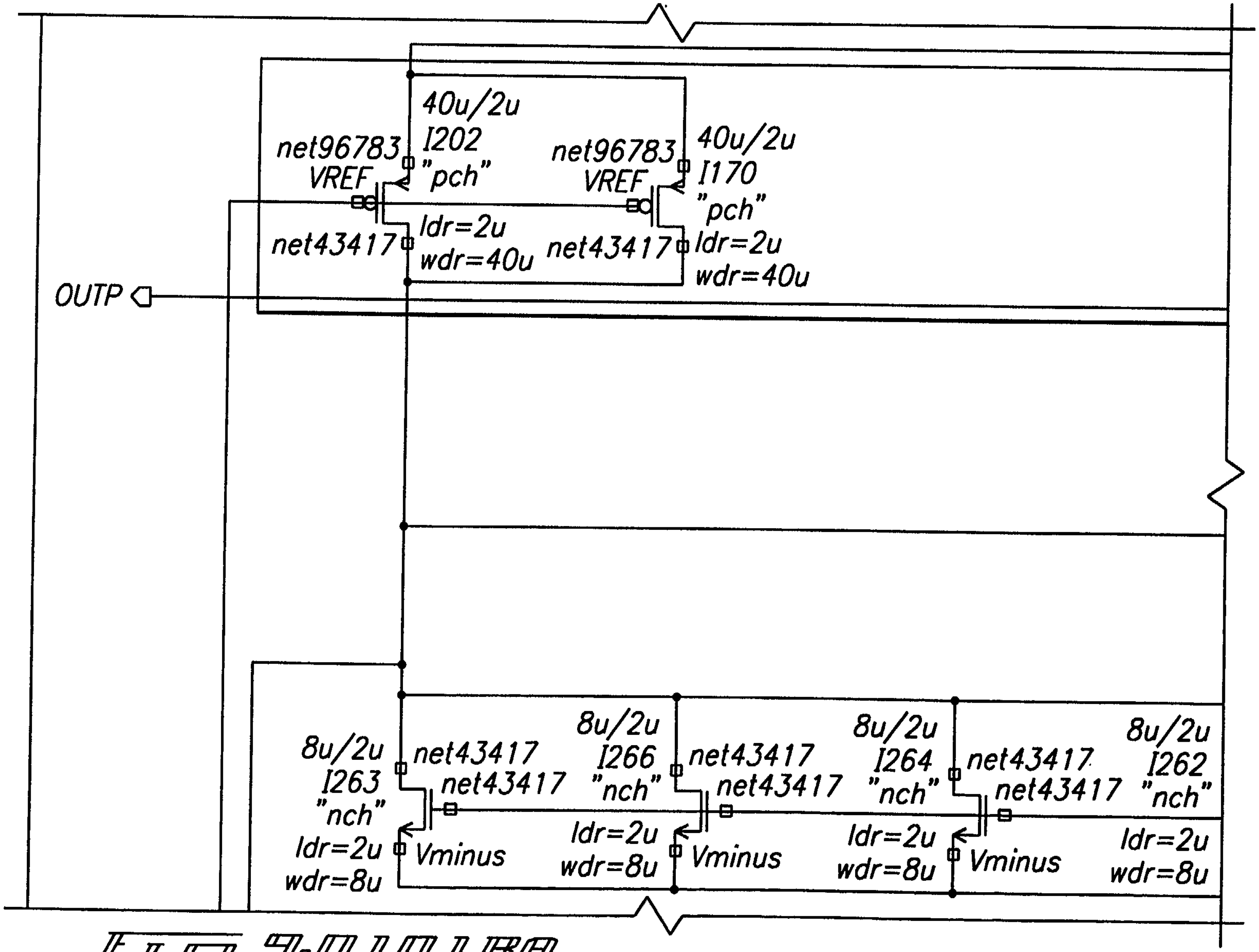

40u/2u
I202
"pch"
net96783
VREF
net43417
ldr=2u
wdr=40u
net96783
VREF
40u/2u
I170
"pch"
net43417
ldr=2u
wdr=40u
OUTP
8u/2u
I263
"nch"
ldr=2u
wdr=8u
net43417
net43417
Vminus
8u/2u
I266
"nch"
ldr=2u
wdr=8u
net43417
net43417
Vminus
8u/2u
I264
"nch"
ldr=2u
wdr=8u
net43417
net43417
Vminus
8u/2u
I262
"nch"
ldr=2u
wdr=8u

FIG 9.0101BA

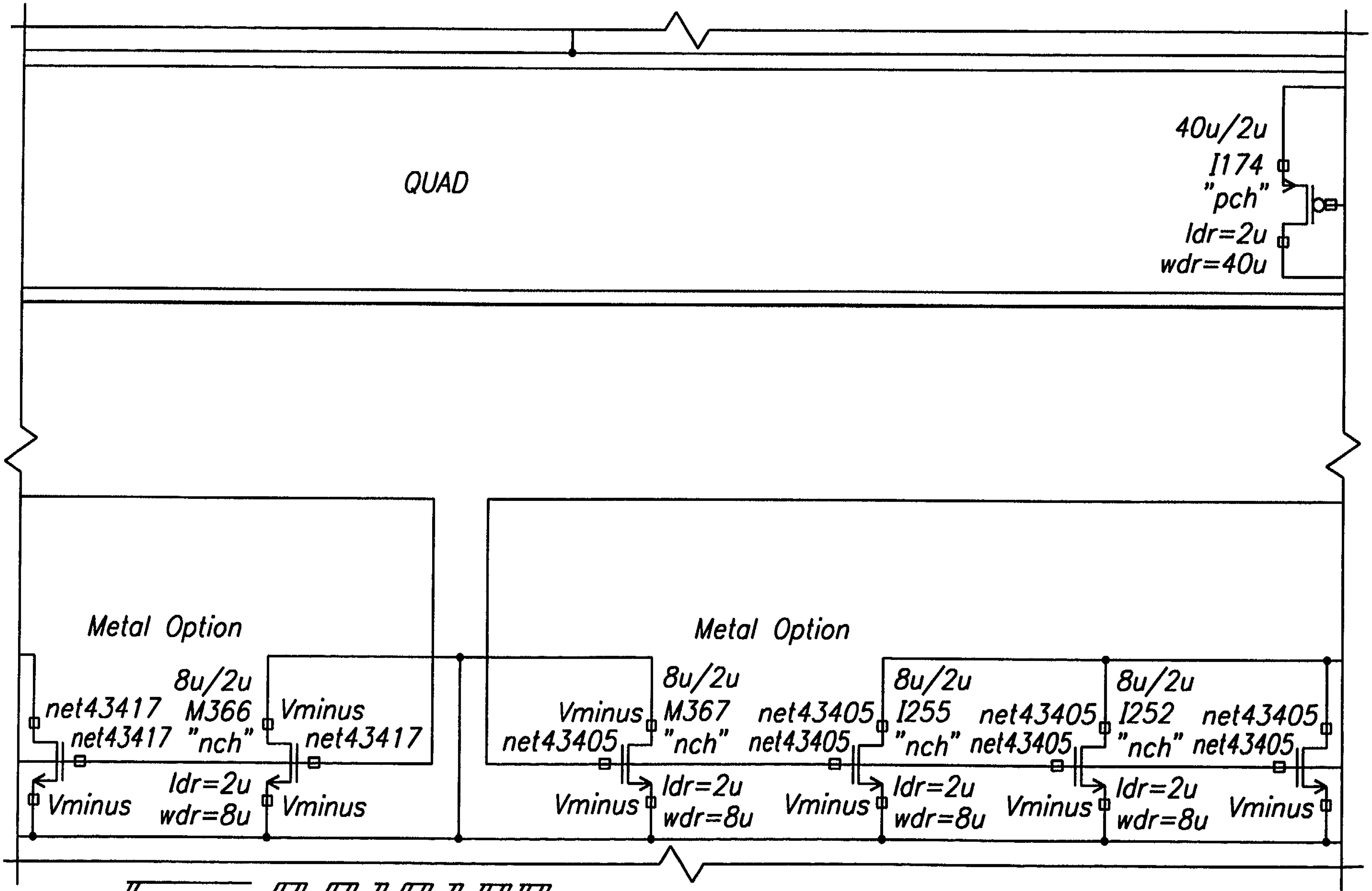

QUAD
40u/2u
I174
"pch"
ldr=2u
wdr=40u
Metal Option
net43417
net43417
8u/2u
M366
"nch"
ldr=2u
wdr=8u
Vminus
Vminus
net43417
Vminus
Metal Option
Vminus
net43405
8u/2u
M367
"nch"
ldr=2u
wdr=8u
Vminus
net43405
net43405
8u/2u
I255
"nch"
ldr=2u
wdr=8u
Vminus
net43405
net43405
8u/2u
I252
"nch"
ldr=2u
wdr=8u
Vminus
net43405
net43405
Vminus

Fig 9.0101BB

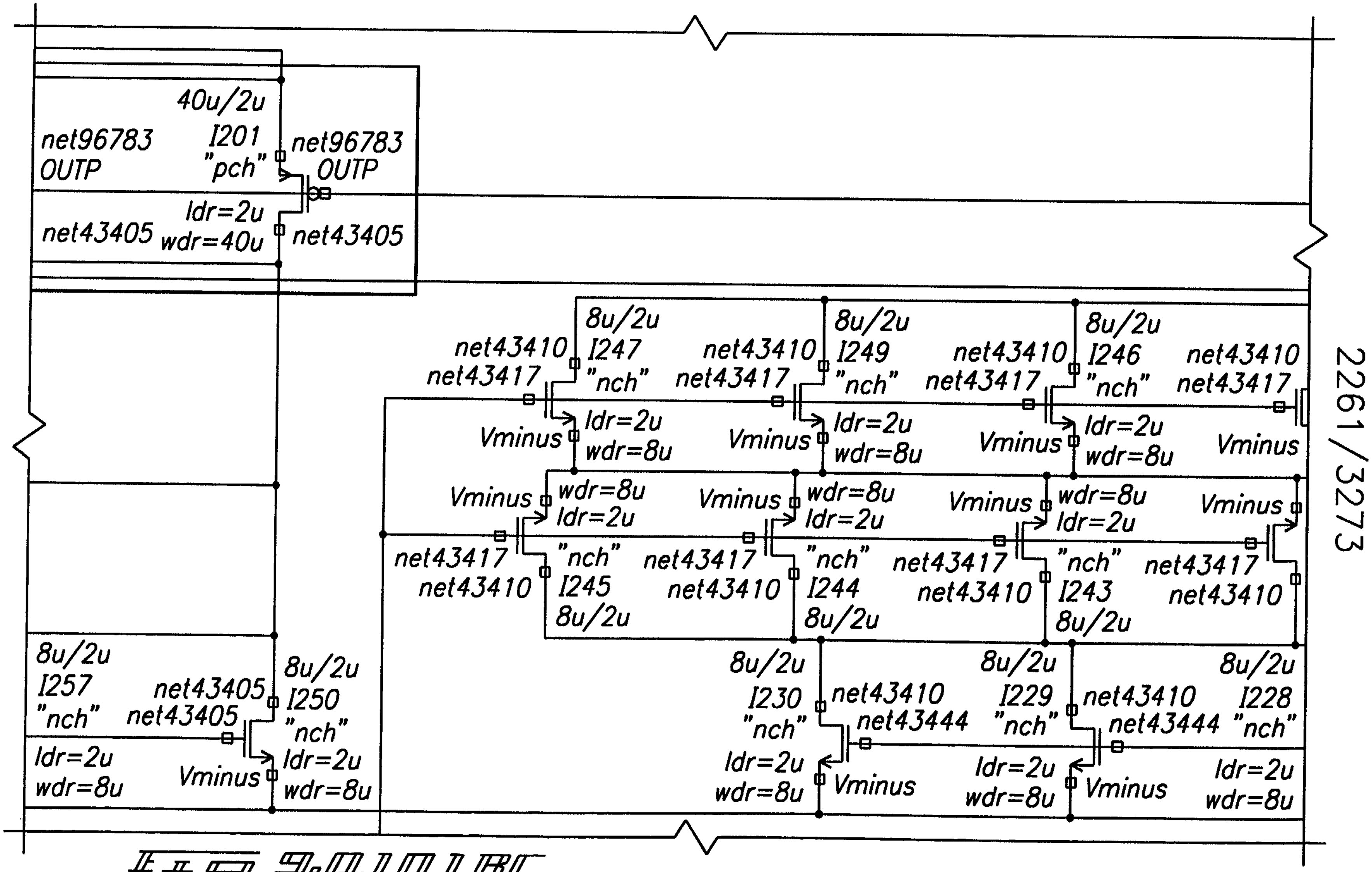


Fig 9.0101BC

2261/3273

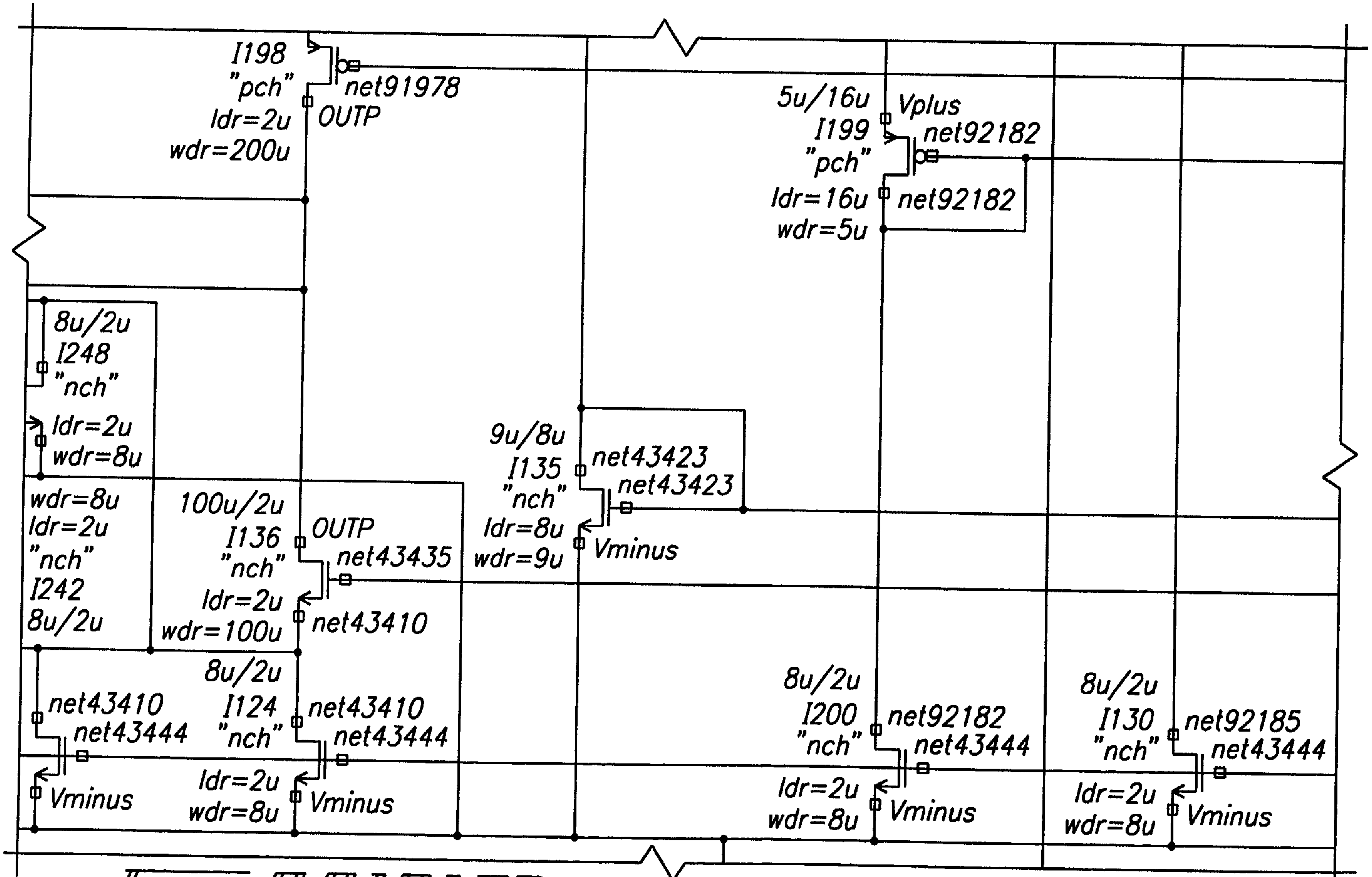

I198
"pch"
ldr=2u
wdr=200u
net91978
OUTP
5u/16u
I199
"pch"
ldr=16u
wdr=5u
Vplus
net92182
net92182
8u/2u
I248
"nch"
ldr=2u
wdr=8u
wdr=8u
ldr=2u
"nch"
I242
8u/2u
100u/2u
I136
"nch"
ldr=2u
wdr=100u
OUTP
net43435
net43410
9u/8u
I135
"nch"
ldr=8u
wdr=9u
net43423
net43423
Vminus
net43410
net43444
Vminus
8u/2u
I124
"nch"
ldr=2u
wdr=8u
net43410
net43444
Vminus
8u/2u
I200
"nch"
ldr=2u
wdr=8u
net92182
net43444
Vminus
8u/2u
I130
"nch"
ldr=2u
wdr=8u
net92185
net43444
Vminus

Fig 9.0101BD

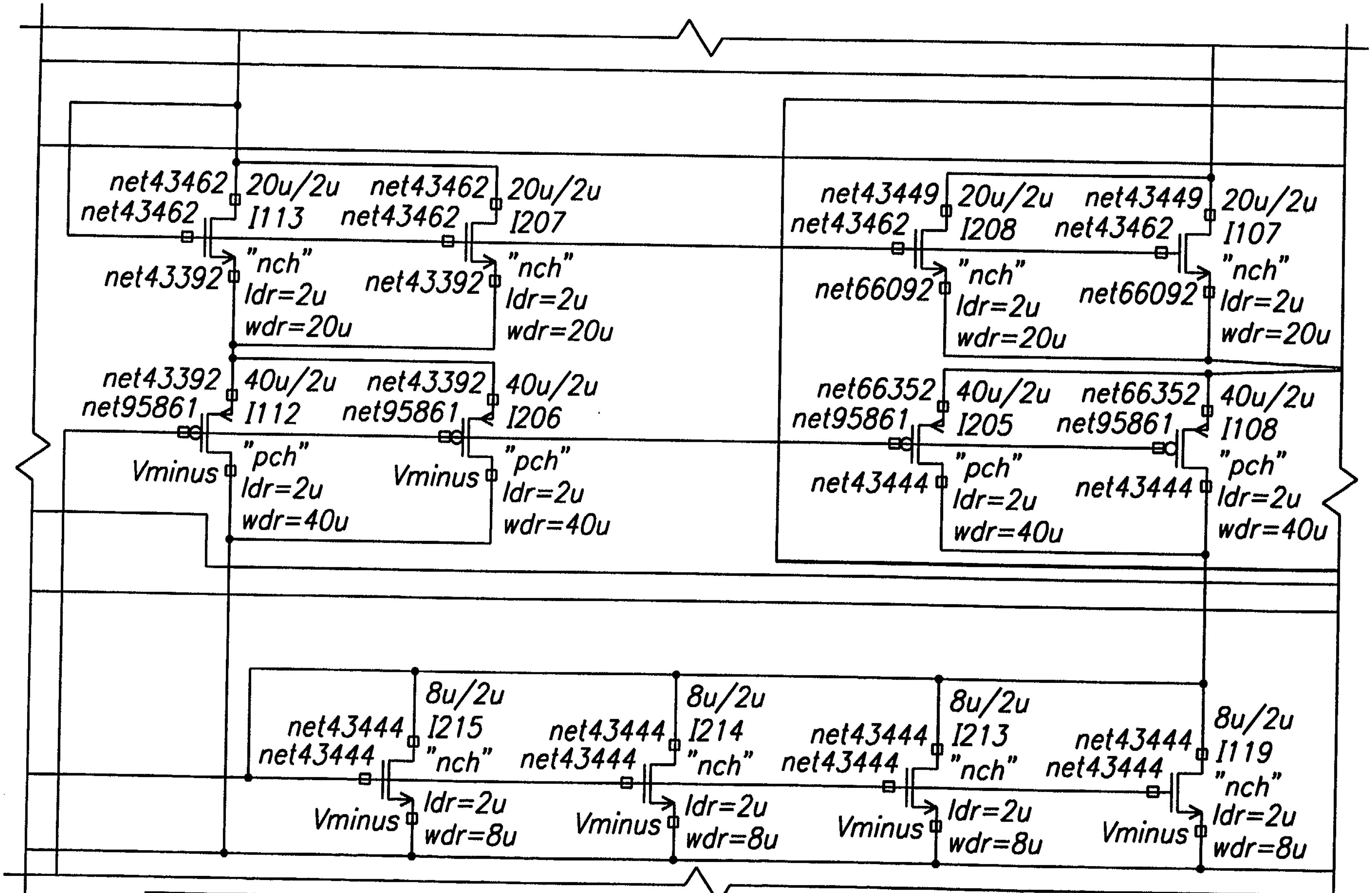

net43462
net43462
20u/2u
I113
"nch"
net43392
ldr=2u
wdr=20u
net43462
net43462
20u/2u
I207
"nch"
net43392
ldr=2u
wdr=20u
net43449
net43462
20u/2u
I208
"nch"
net66092
ldr=2u
wdr=20u
net43449
net43462
20u/2u
I107
"nch"
net66092
ldr=2u
wdr=20u
net43392
net95861
40u/2u
I112
"pch"
Vminus
ldr=2u
wdr=40u
net43392
net95861
40u/2u
I206
"pch"
Vminus
ldr=2u
wdr=40u
net66352
net95861
40u/2u
I205
"pch"
net43444
ldr=2u
wdr=40u
net66352
net95861
40u/2u
I108
"pch"
net43444
ldr=2u
wdr=40u
net43444
net43444
8u/2u
I215
"nch"
Vminus
ldr=2u
wdr=8u
net43444
net43444
8u/2u
I214
"nch"
Vminus
ldr=2u
wdr=8u
net43444
net43444
8u/2u
I213
"nch"
Vminus
ldr=2u
wdr=8u
net43444
net43444
8u/2u
I119
"nch"
Vminus
ldr=2u
wdr=8u

Fig 9.0101BE

2264/3273

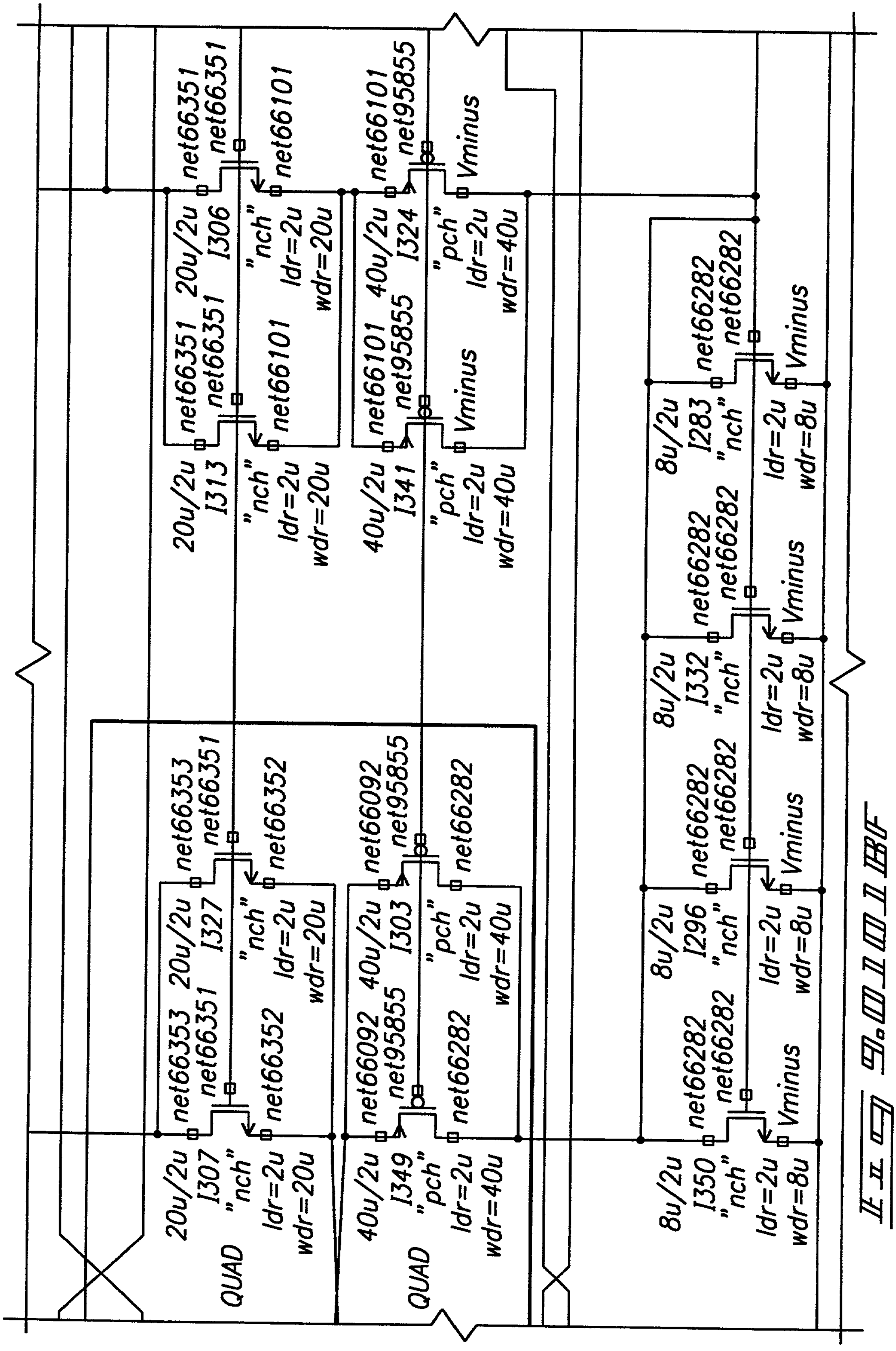


FIG. 9.DIDIBF

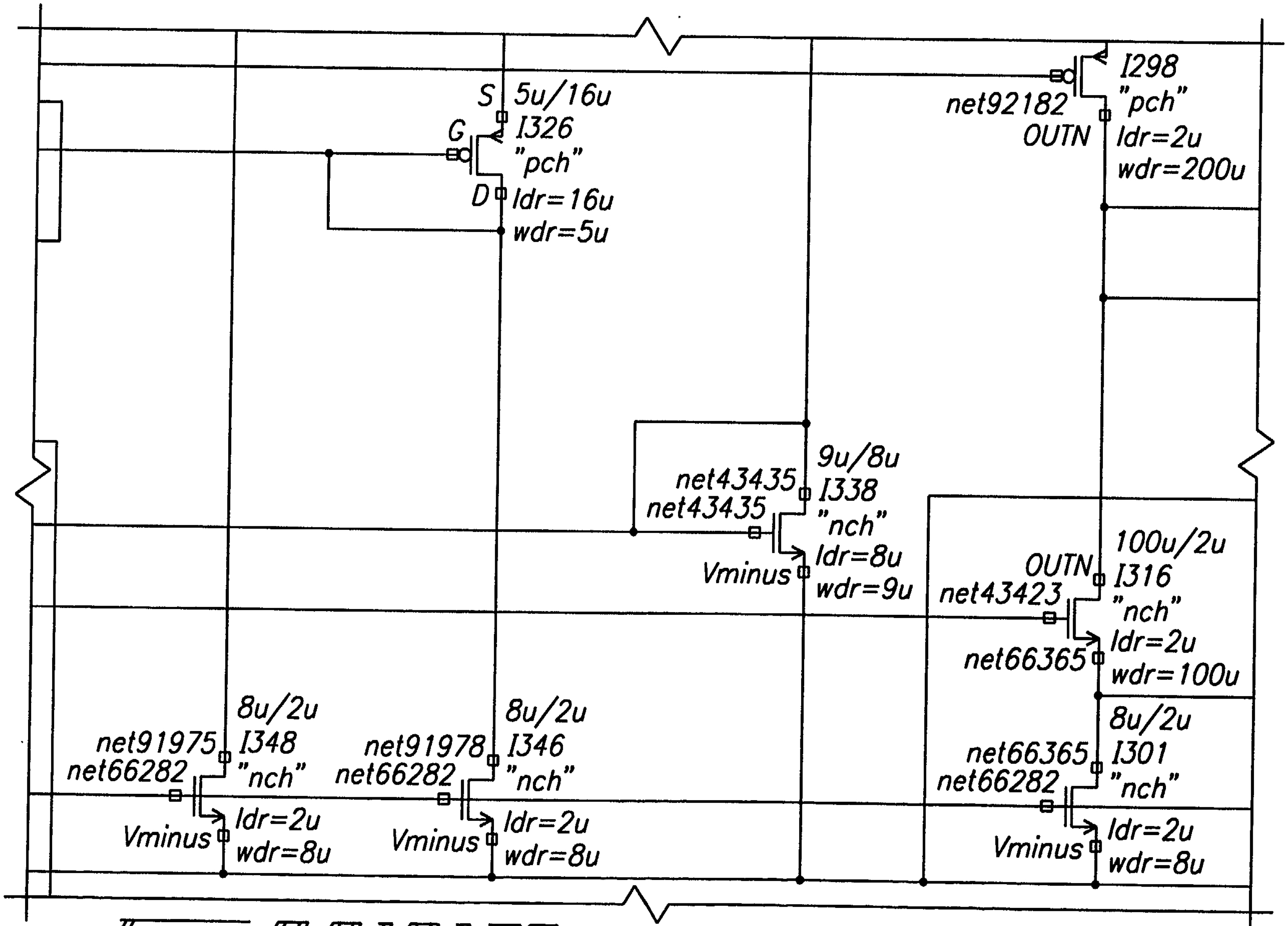

S
5u/16u
I326
"pch"
G
D
ldr=16u
wdr=5u
I298
"pch"
net92182
OUTN
ldr=2u
wdr=200u
net43435
net43435
9u/8u
I338
"nch"
Vminus
ldr=8u
wdr=9u
OUTN
100u/2u
I316
"nch"
net43423
net66365
ldr=2u
wdr=100u
net91975
net66282
8u/2u
I348
"nch"
Vminus
ldr=2u
wdr=8u
net91978
net66282
8u/2u
I346
"nch"
Vminus
ldr=2u
wdr=8u
net66365
net66282
8u/2u
I301
"nch"
Vminus
ldr=2u
wdr=8u

FIG 9.0101BG

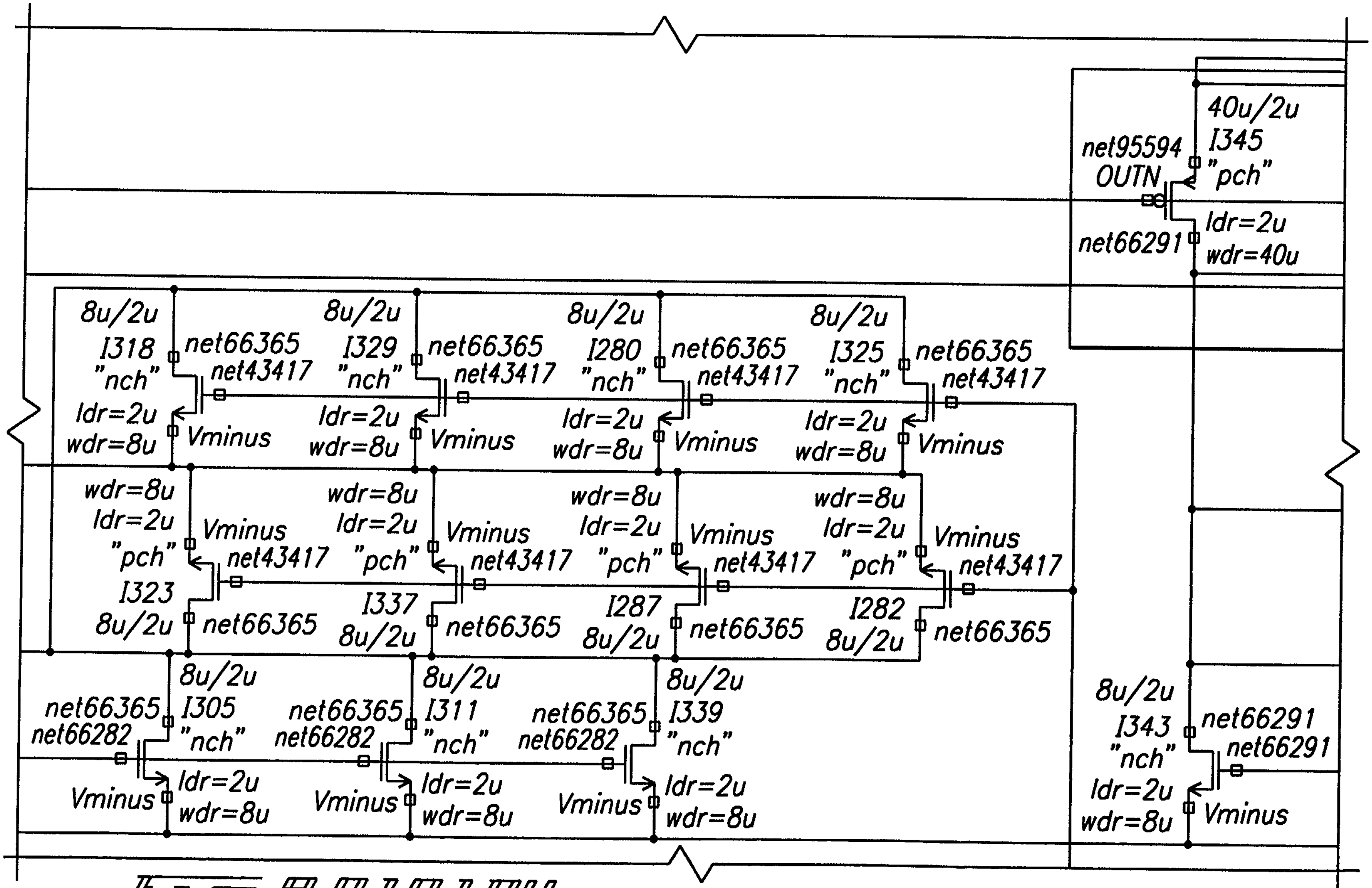

40u/2u
I345
"pch"
net95594
OUTN
net66291
Idr=2u
wdr=40u
8u/2u
I318
"nch"
net66365
net43417
Idr=2u
wdr=8u
Vminus
8u/2u
I329
"nch"
net66365
net43417
Idr=2u
wdr=8u
Vminus
8u/2u
I280
"nch"
net66365
net43417
Idr=2u
wdr=8u
Vminus
8u/2u
I325
"nch"
net66365
net43417
Idr=2u
wdr=8u
Vminus
wdr=8u
Idr=2u
"pch"
I323
8u/2u
Vminus
net43417
net66365
wdr=8u
Idr=2u
"pch"
I337
8u/2u
Vminus
net43417
net66365
wdr=8u
Idr=2u
"pch"
I287
8u/2u
Vminus
net43417
net66365
wdr=8u
Idr=2u
"pch"
I282
8u/2u
Vminus
net43417
net66365
net66365
net66282
8u/2u
I305
"nch"
Idr=2u
wdr=8u
Vminus
net66365
net66282
8u/2u
I311
"nch"
Idr=2u
wdr=8u
Vminus
net66365
net66282
8u/2u
I339
"nch"
Idr=2u
wdr=8u
Vminus
8u/2u
I343
"nch"
Idr=2u
wdr=8u
net66291
net66291
Vminus

Fig 9.0101BH

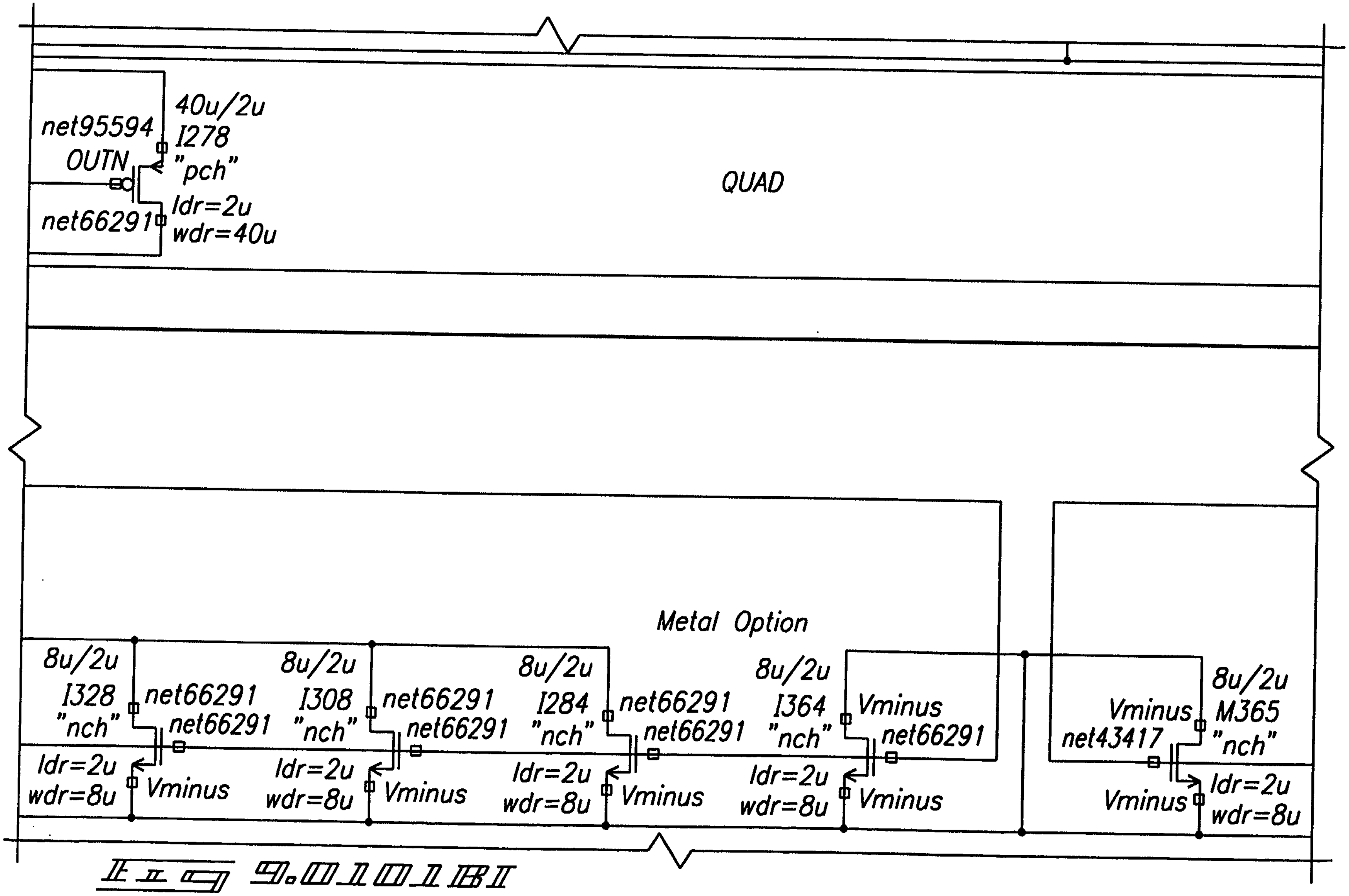

net95594
OUTN
net66291
40u/2u
I278
"pch"
ldr=2u
wdr=40u
QUAD
Metal Option
8u/2u
I328
"nch"
ldr=2u
wdr=8u
net66291
net66291
Vminus
8u/2u
I308
"nch"
ldr=2u
wdr=8u
net66291
net66291
Vminus
8u/2u
I284
"nch"
ldr=2u
wdr=8u
net66291
net66291
Vminus
8u/2u
I364
"nch"
ldr=2u
wdr=8u
Vminus
net66291
Vminus
Vminus
net43417
Vminus
8u/2u
M365
"nch"
ldr=2u
wdr=8u

Fig 9.0101B1

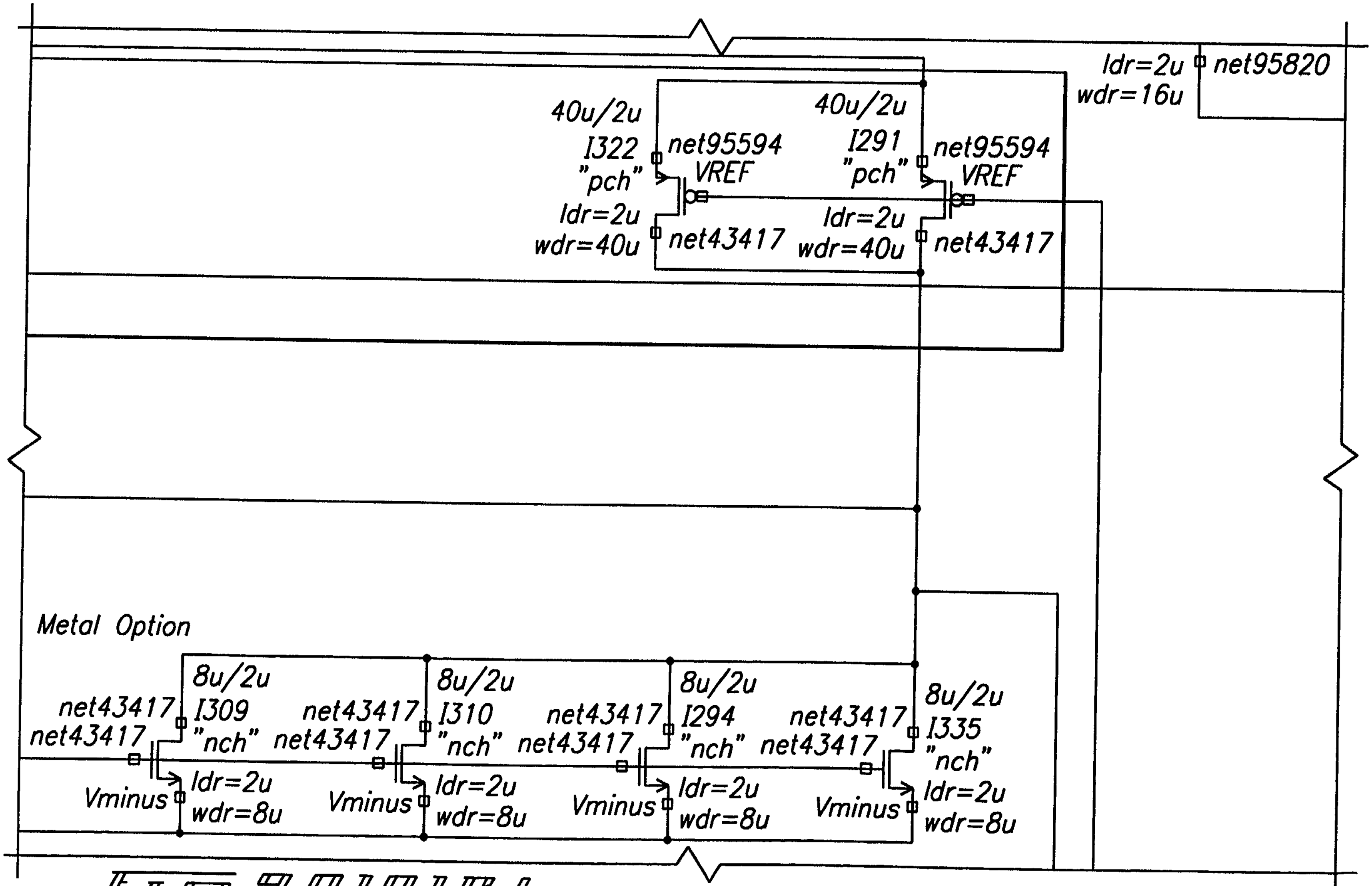

ldr=2u
wdr=16u
net95820
40u/2u
I322
"pch"
ldr=2u
wdr=40u
net95594
VREF
net43417
40u/2u
I291
"pch"
ldr=2u
wdr=40u
net95594
VREF
net43417
Metal Option
8u/2u
I309
"nch"
ldr=2u
wdr=8u
net43417
net43417
Vminus
8u/2u
I310
"nch"
ldr=2u
wdr=8u
net43417
net43417
Vminus
8u/2u
I294
"nch"
ldr=2u
wdr=8u
net43417
net43417
Vminus
8u/2u
I335
"nch"
ldr=2u
wdr=8u
net43417
net43417
Vminus

Fig 9.0101B.1

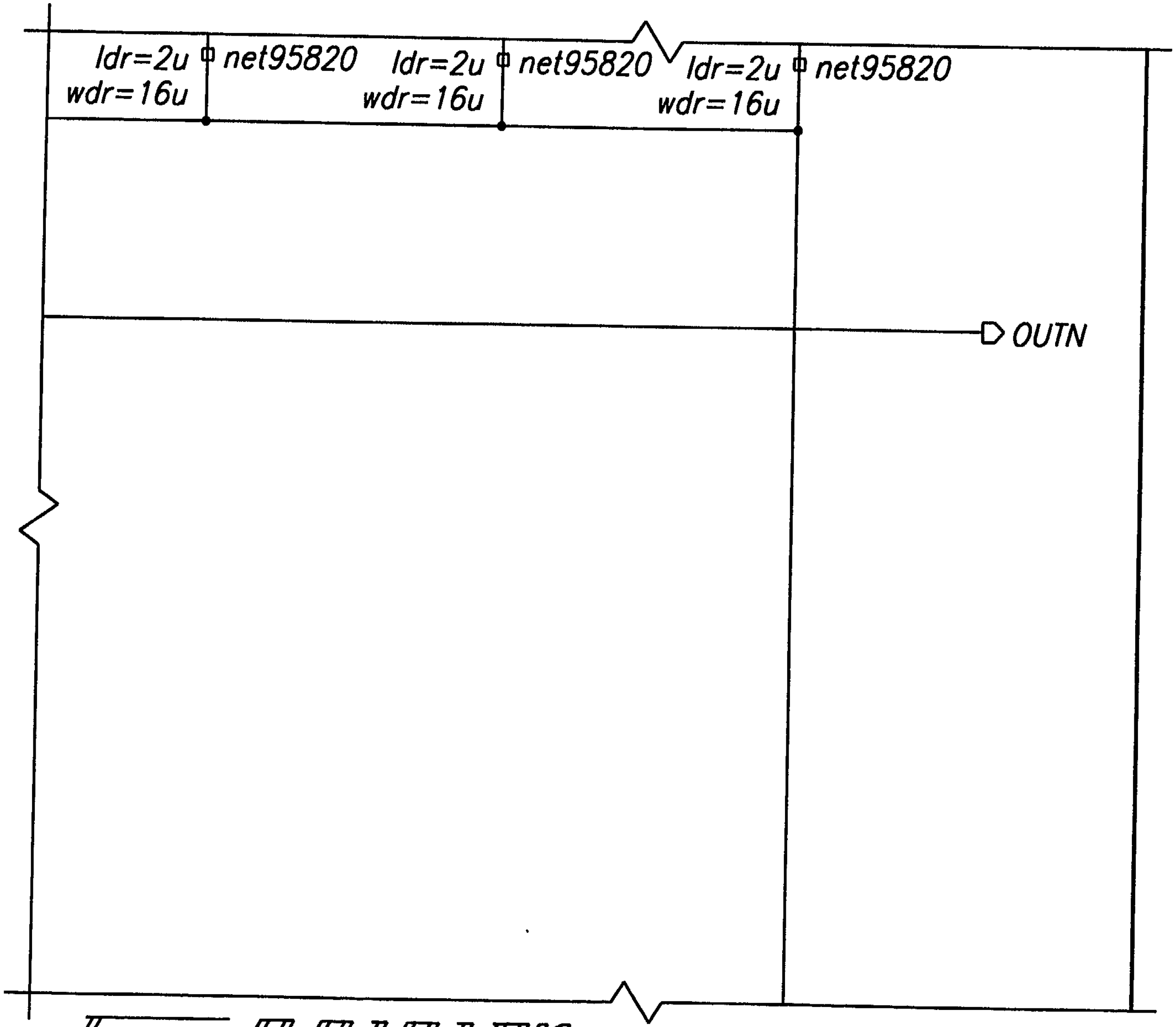
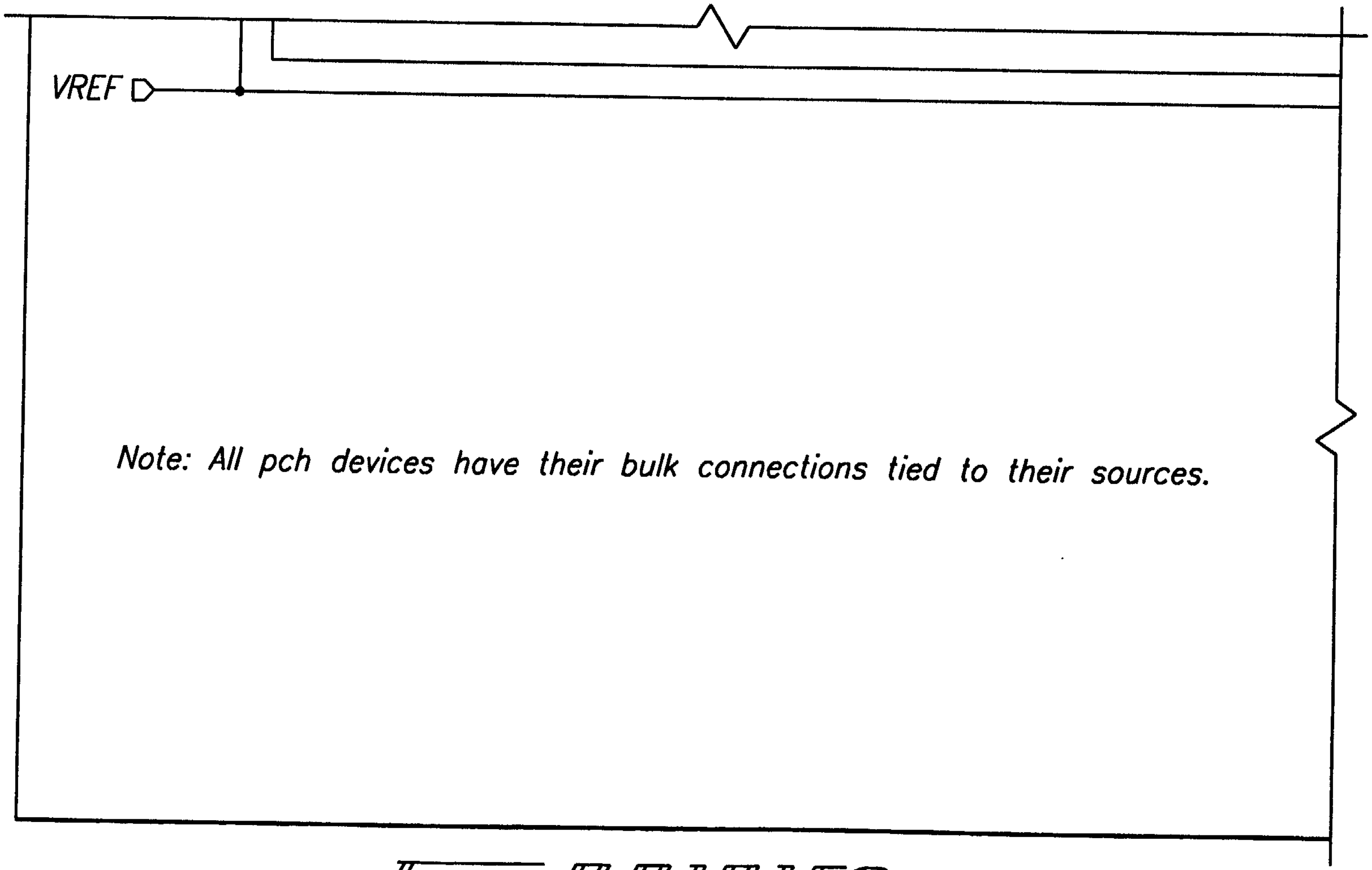

ldr=2u
wdr=16u
net95820
ldr=2u
wdr=16u
net95820
ldr=2u
wdr=16u
net95820
OUTN

Fig 9.0101BK



Note: All pch devices have their bulk connections tied to their sources.

Fig 9.0101CA

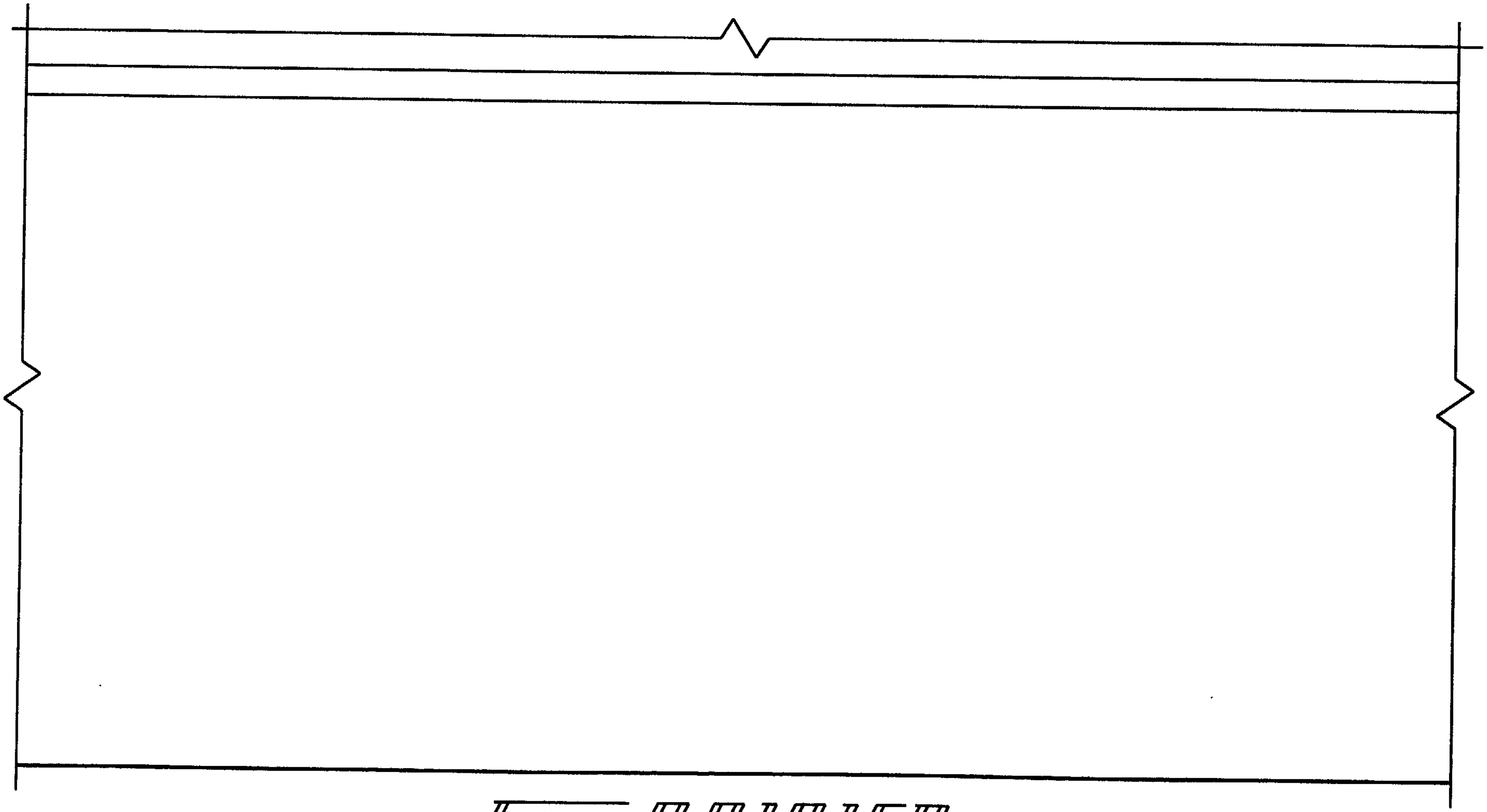


Fig 9.0101CB

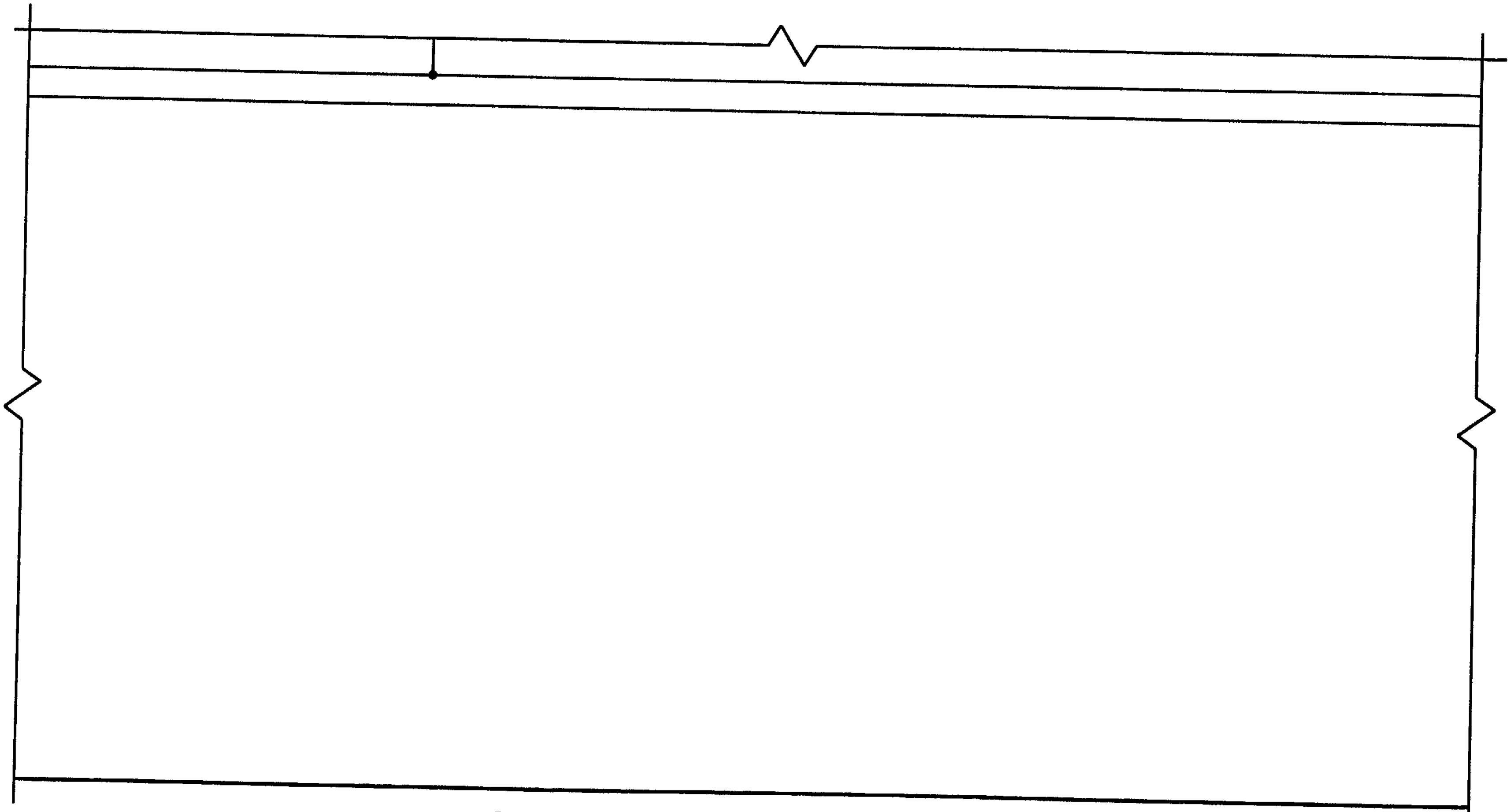


Fig 9.0101CC

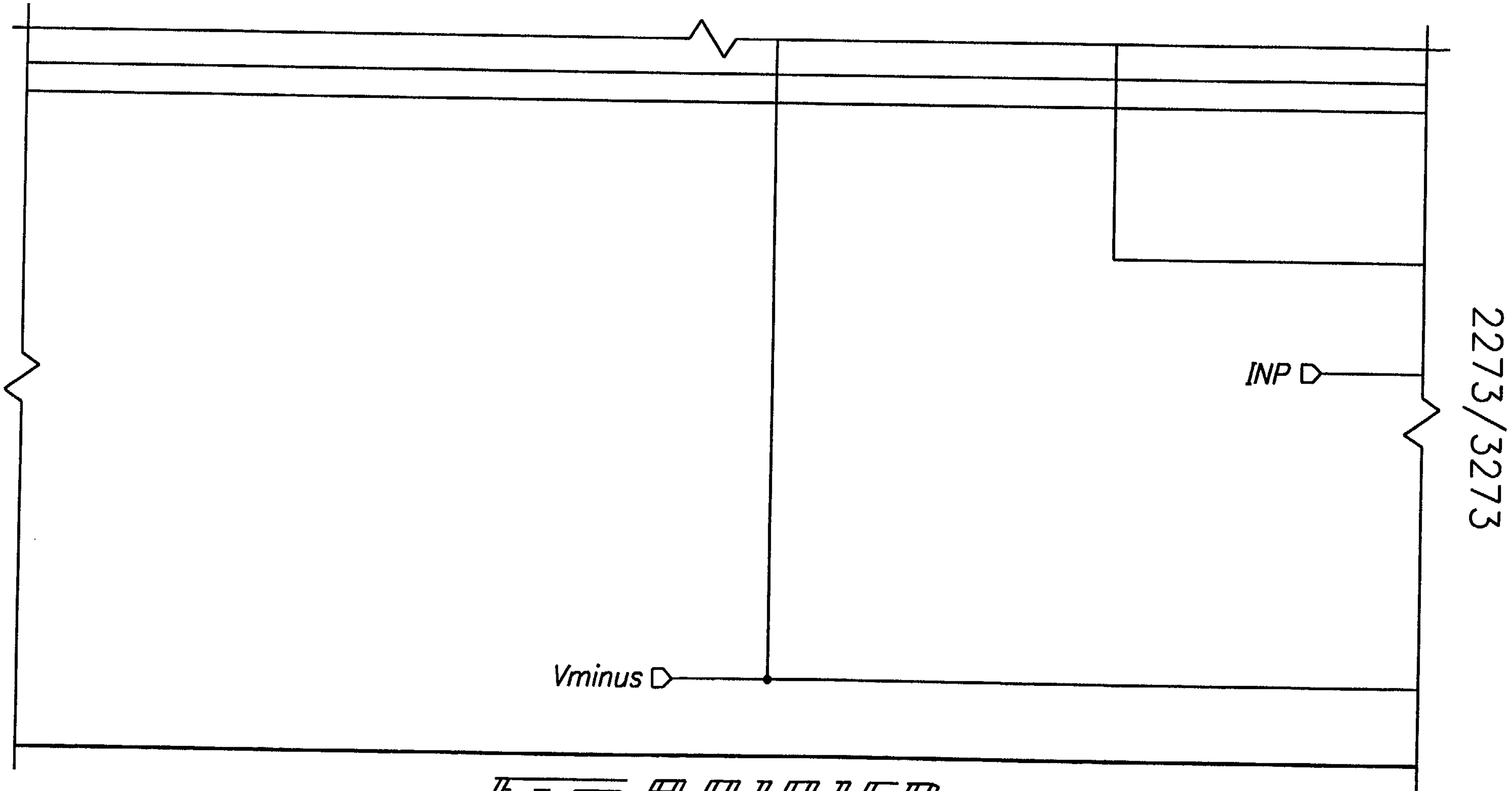


Fig 9.0101CD

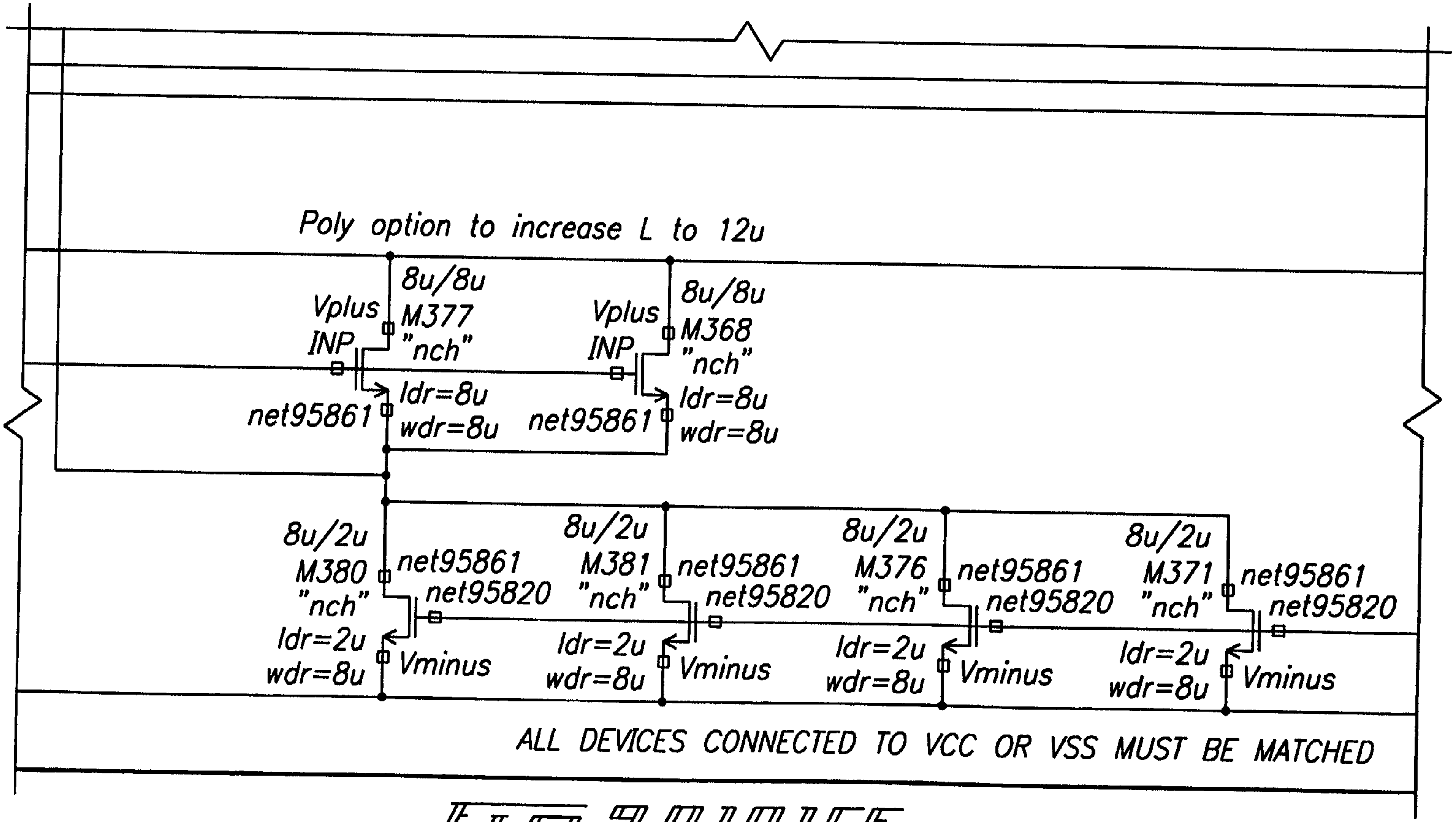

Poly option to increase L to 12u
Vplus
INP
8u/8u
M377
"nch"
ldr=8u
wdr=8u
net95861
Vplus
INP
8u/8u
M368
"nch"
ldr=8u
wdr=8u
net95861
8u/2u
M380
"nch"
ldr=2u
wdr=8u
net95861
net95820
Vminus
8u/2u
M381
"nch"
ldr=2u
wdr=8u
net95861
net95820
Vminus
8u/2u
M376
"nch"
ldr=2u
wdr=8u
net95861
net95820
Vminus
8u/2u
M371
"nch"
ldr=2u
wdr=8u
net95861
net95820
Vminus
ALL DEVICES CONNECTED TO VCC OR VSS MUST BE MATCHED

Fig 9.0101CE

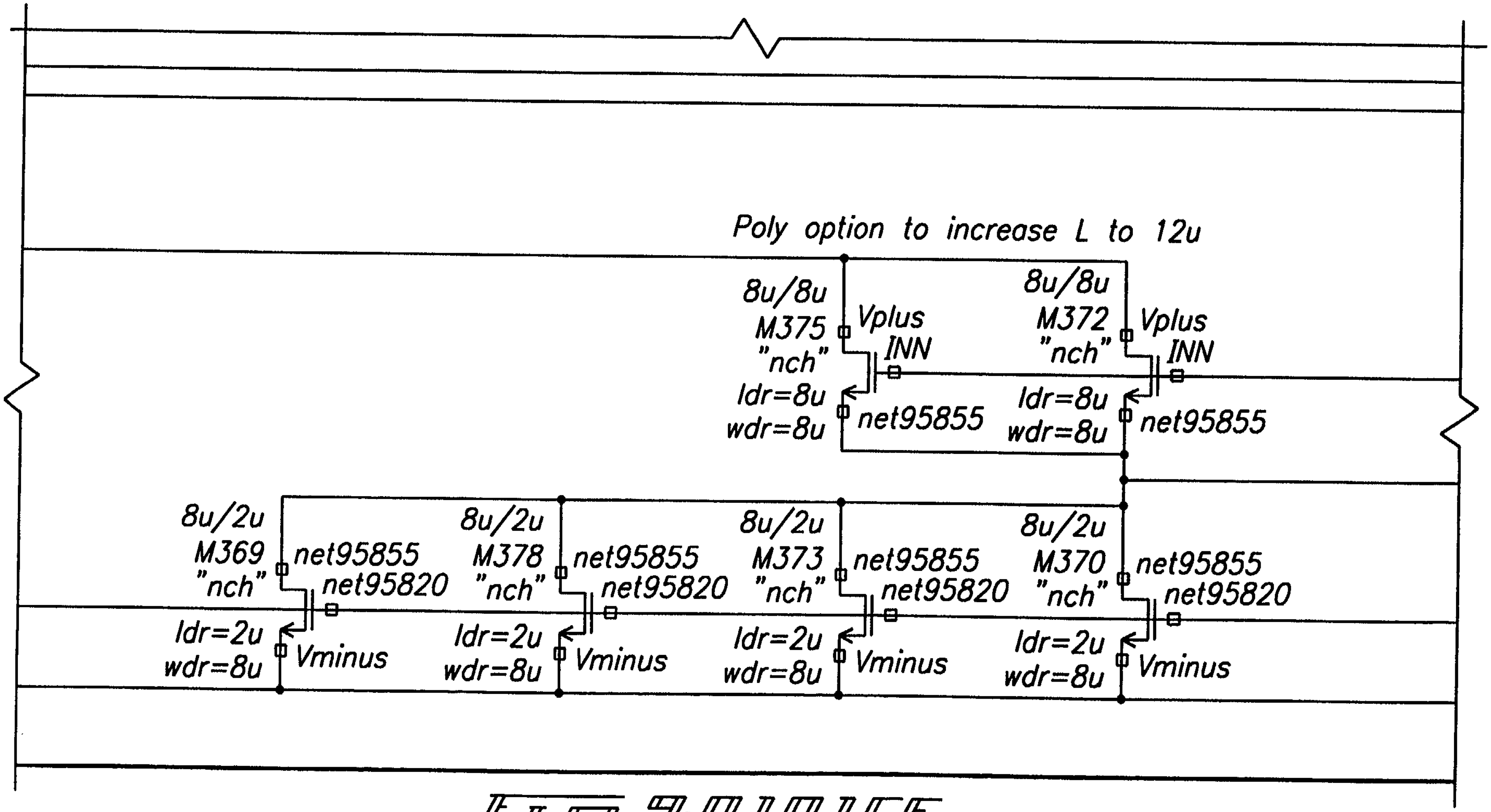

Poly option to increase L to 12u
8u/8u
M375
"nch"
ldr=8u
wdr=8u
Vplus
INN
net95855
8u/8u
M372
"nch"
ldr=8u
wdr=8u
Vplus
INN
net95855
8u/2u
M369
"nch"
ldr=2u
wdr=8u
net95855
net95820
Vminus
8u/2u
M378
"nch"
ldr=2u
wdr=8u
net95855
net95820
Vminus
8u/2u
M373
"nch"
ldr=2u
wdr=8u
net95855
net95820
Vminus
8u/2u
M370
"nch"
ldr=2u
wdr=8u
net95855
net95820
Vminus

Fig 9.01ICF

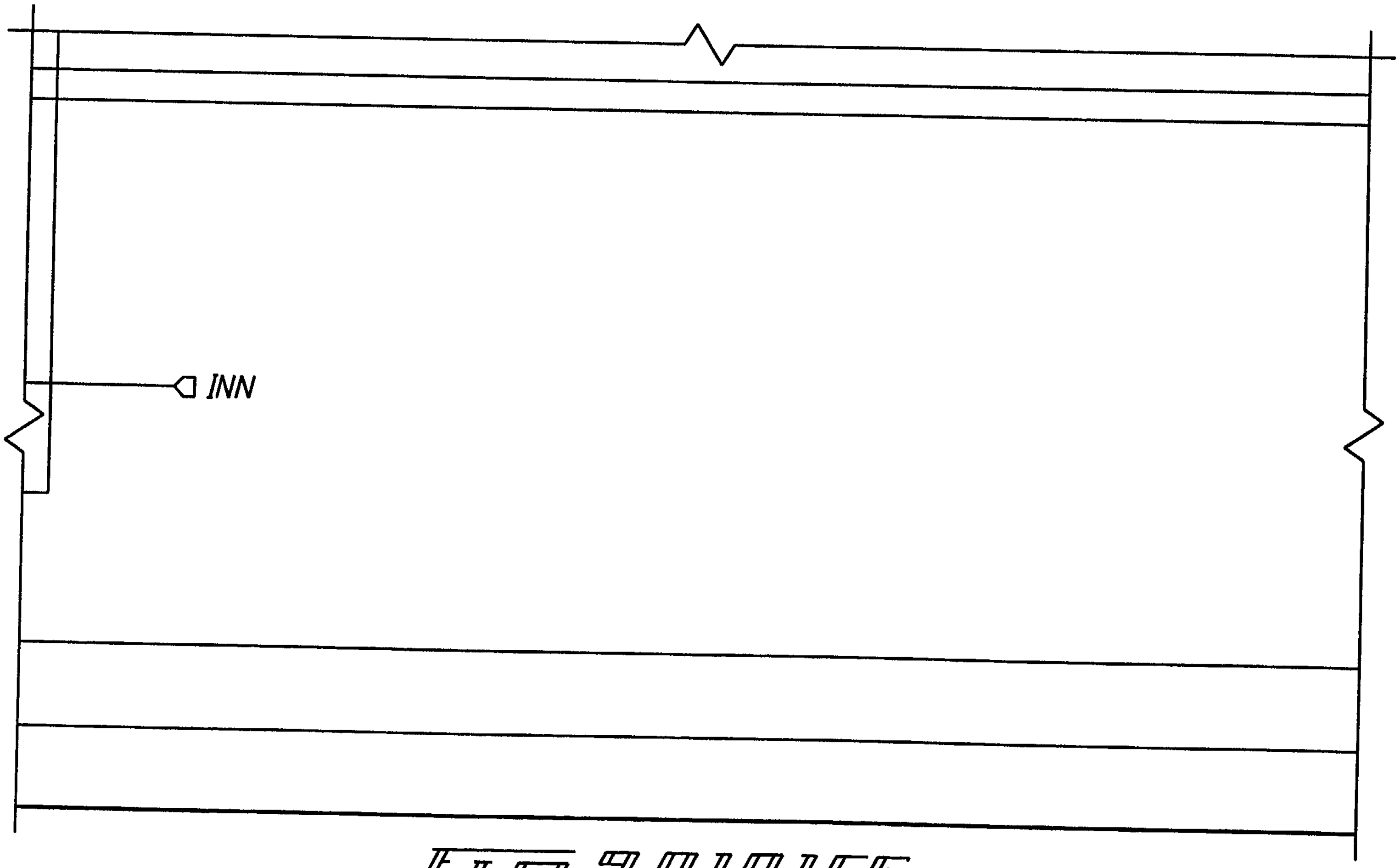


FIG 9.0101CG

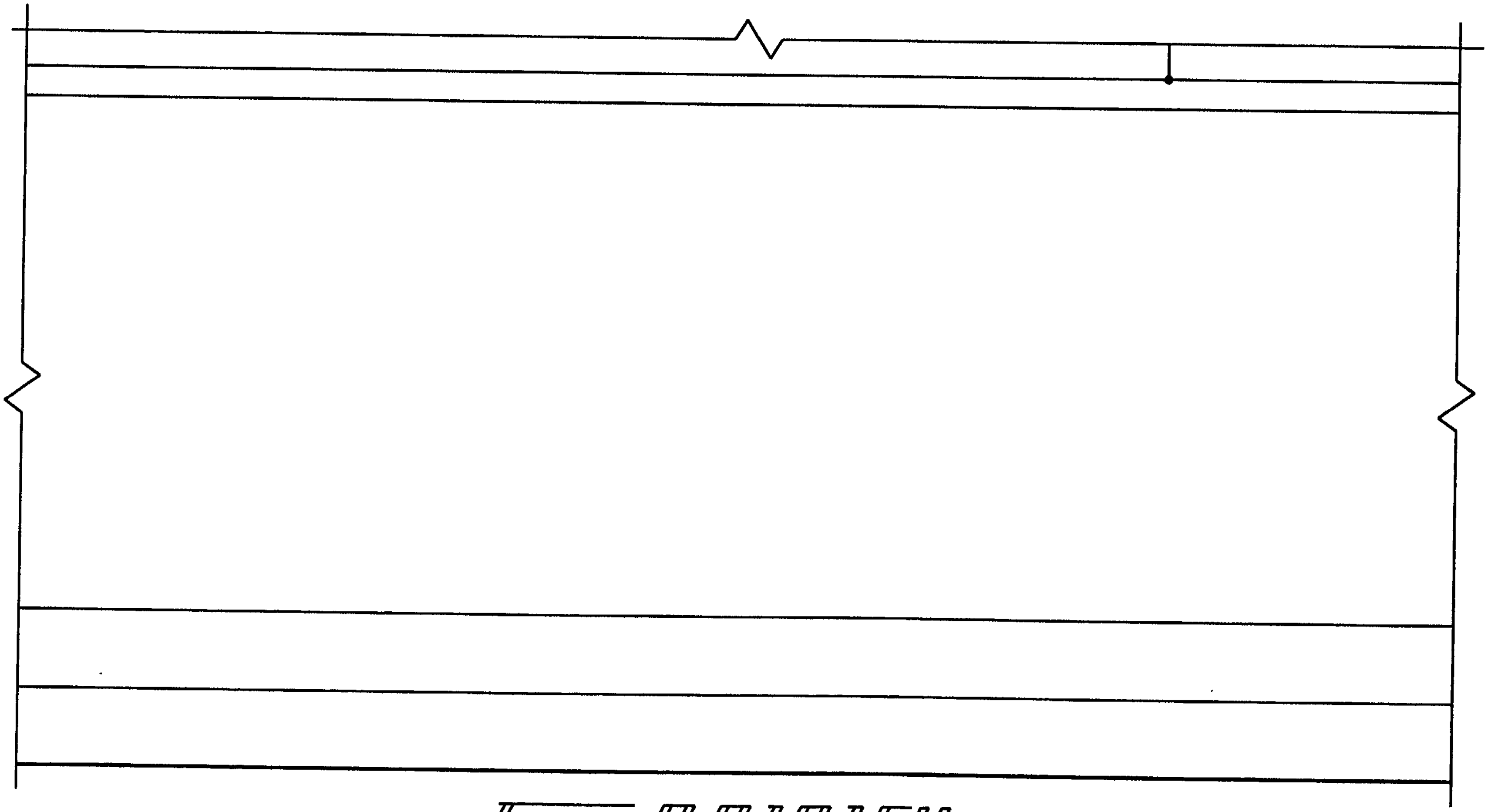


Fig 9.0101CH

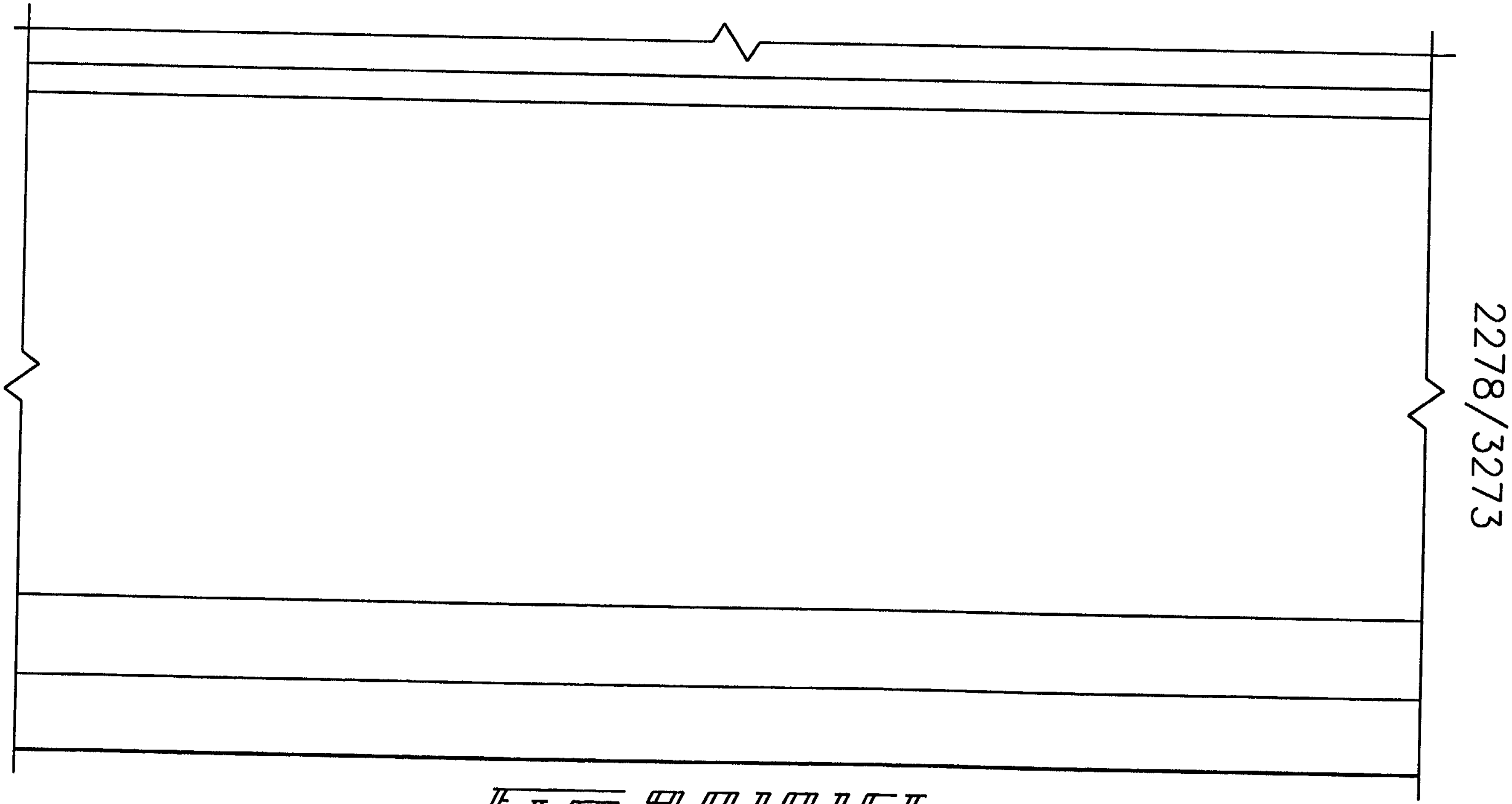


Fig 9.0101CI

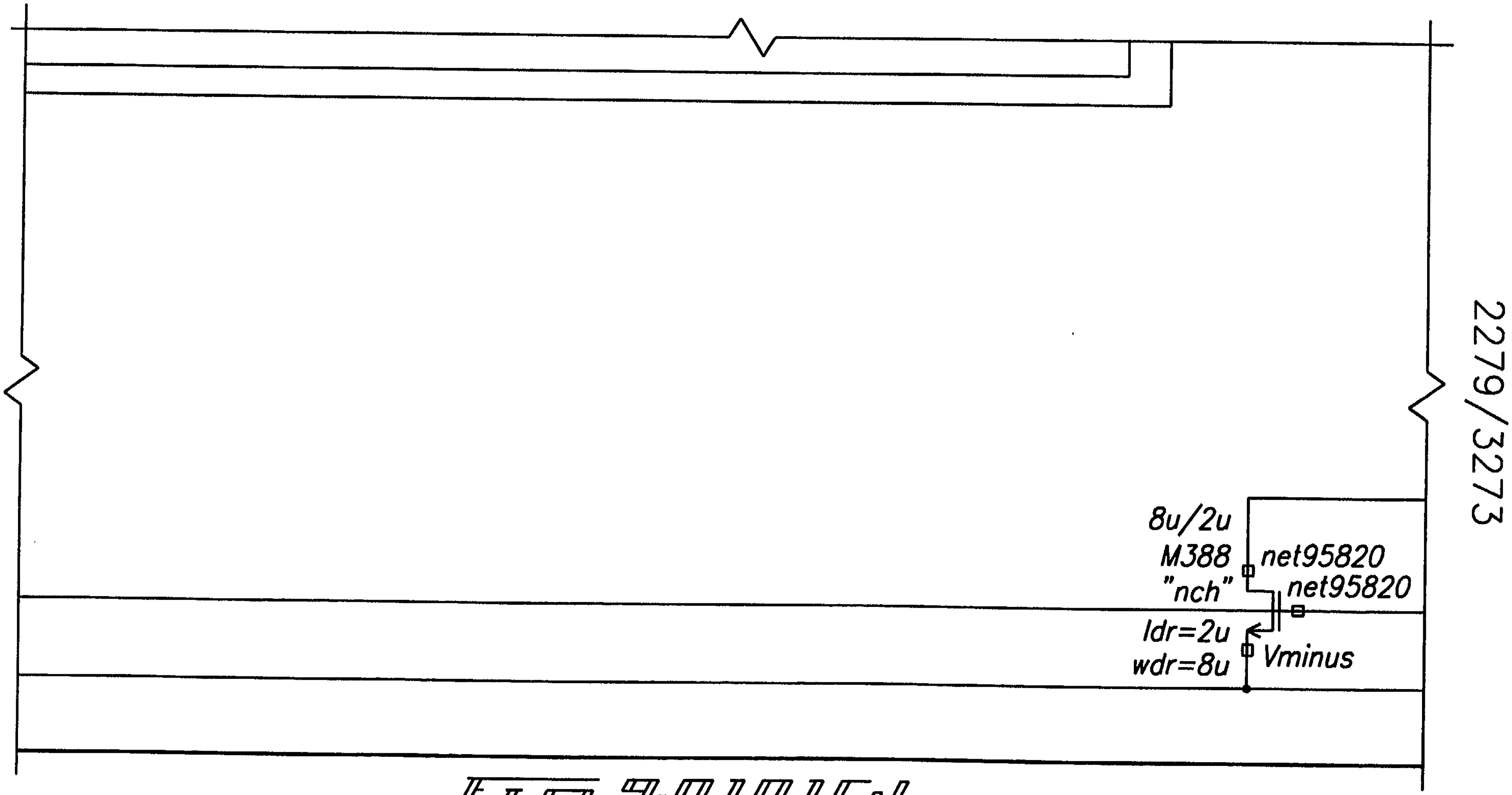

2279/3273
8u/2u
M388
"nch"
net95820
net95820
ldr=2u
wdr=8u
Vminus

Fig 9.0101Cd

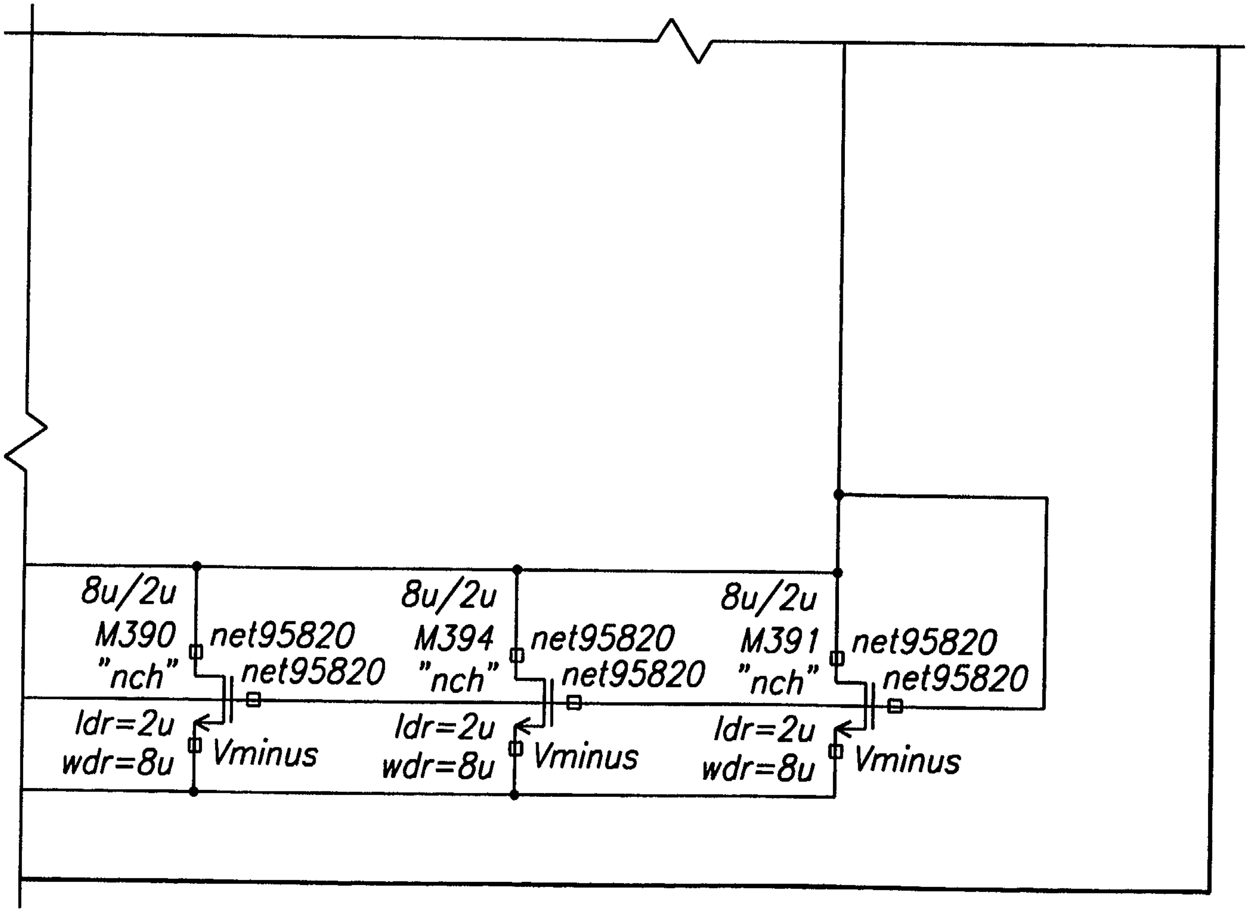

8u/2u
M390
"nch"
net95820
net95820
ldr=2u
wdr=8u
Vminus
8u/2u
M394
"nch"
net95820
net95820
ldr=2u
wdr=8u
Vminus
8u/2u
M391
"nch"
net95820
net95820
ldr=2u
wdr=8u
Vminus

Fig 9.0101CK

2281/3273

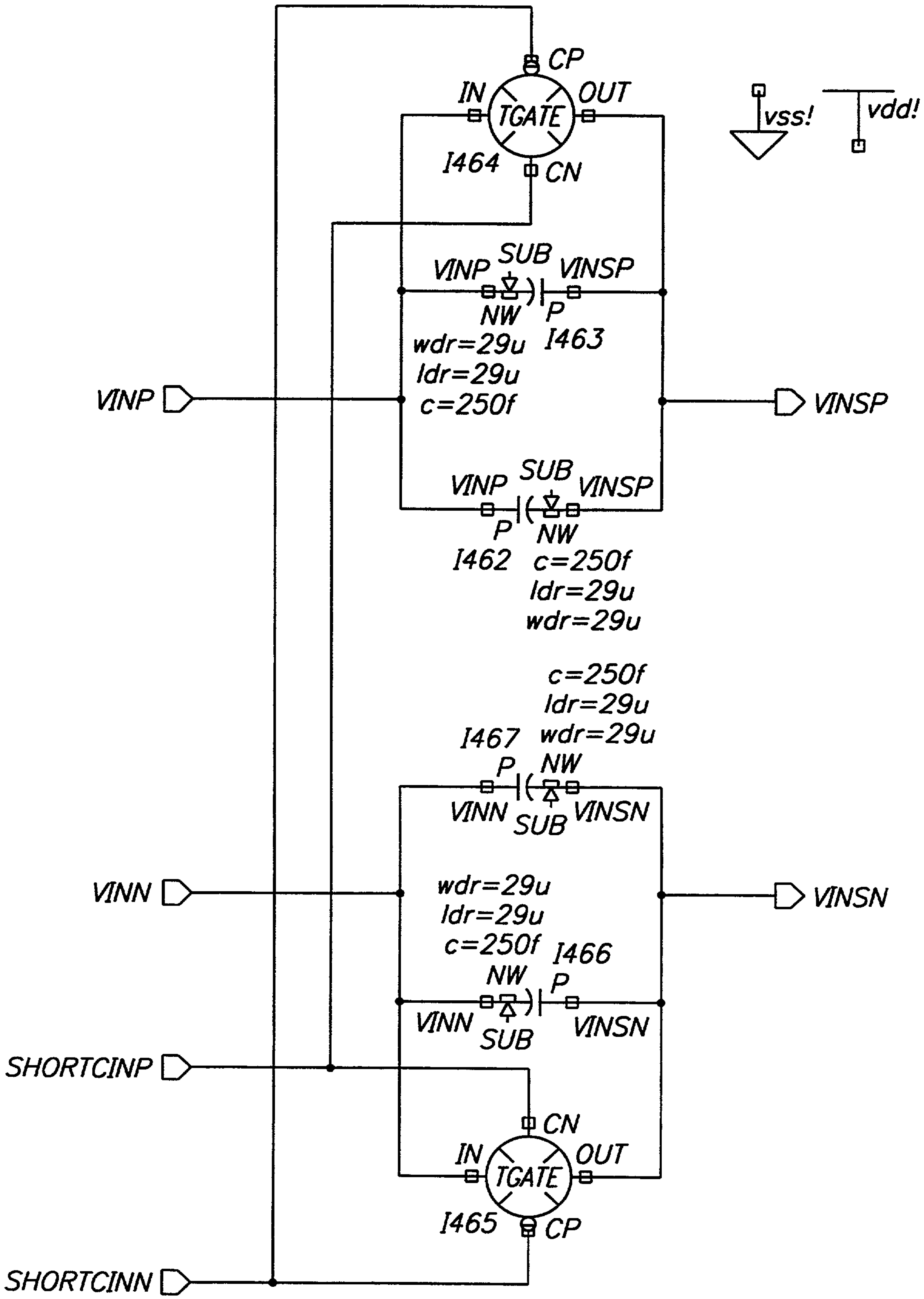


Fig 9.0102

									9.0103AJ	9.0103AK	9.0103AL	9.0103AM	9.0103AN	9.0103AO	9.0103AP
9.0103BA	9.0103BB	9.0103BC	9.0103BD	9.0103BE	9.0103BF	9.0103BG	9.0103BH		9.0103BJ	9.0103BK	9.0103BL	9.0103BM	9.0103BN	9.0103BO	9.0103BP
9.0103CA	9.0103CB	9.0103CC	9.0103CD	9.0103CE	9.0103CF	9.0103CG	9.0103CH	9.0103CI	9.0103CJ	9.0103CK	9.0103CL	9.0103CM	9.0103CN	9.0103CO	9.0103CP
9.0103DA	9.0103DB	9.0103DC	9.0103DD	9.0103DE	9.0103DF	9.0103DG	9.0103DH	9.0103DI	9.0103DJ	9.0103DK	9.0103DL	9.0103DM	9.0103DN	9.0103DO	9.0103DP
9.0103EA	9.0103EB	9.0103EC	9.0103ED	9.0103EE	9.0103EF	9.0103EG	9.0103EH	9.0103EI	9.0103EJ	9.0103EK	9.0103EL	9.0103EM	9.0103EN	9.0103EO	9.0103EP
9.0103FA	9.0103FB	9.0103FC	9.0103FD	9.0103FE	9.0103FF	9.0103FG	9.0103FH	9.0103FI	9.0103FJ	9.0103FK	9.0103FL	9.0103FM	9.0103FN	9.0103FO	9.0103FP

Fig 9.0103

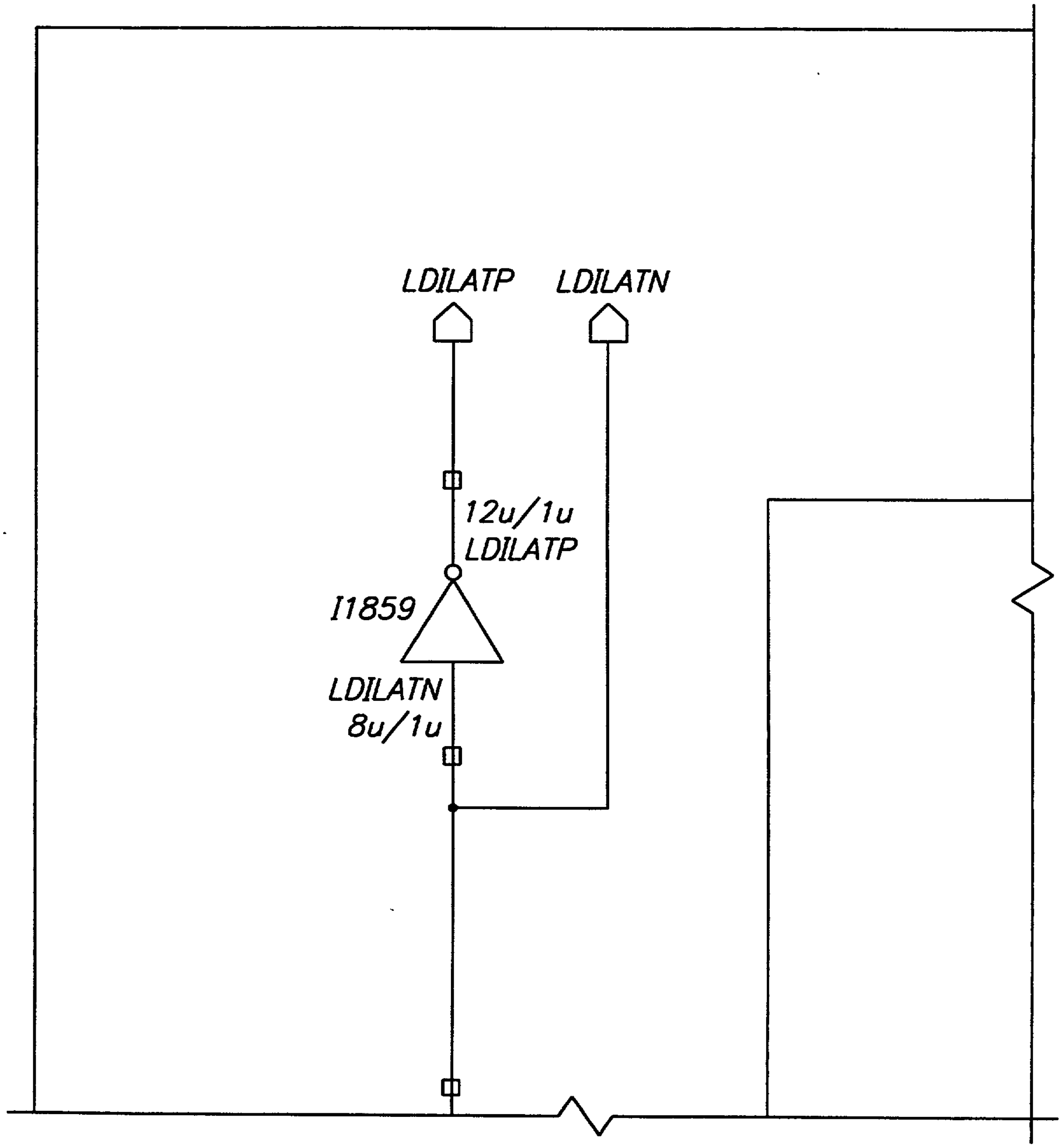


Fig 9.0103A1

09822053.061701

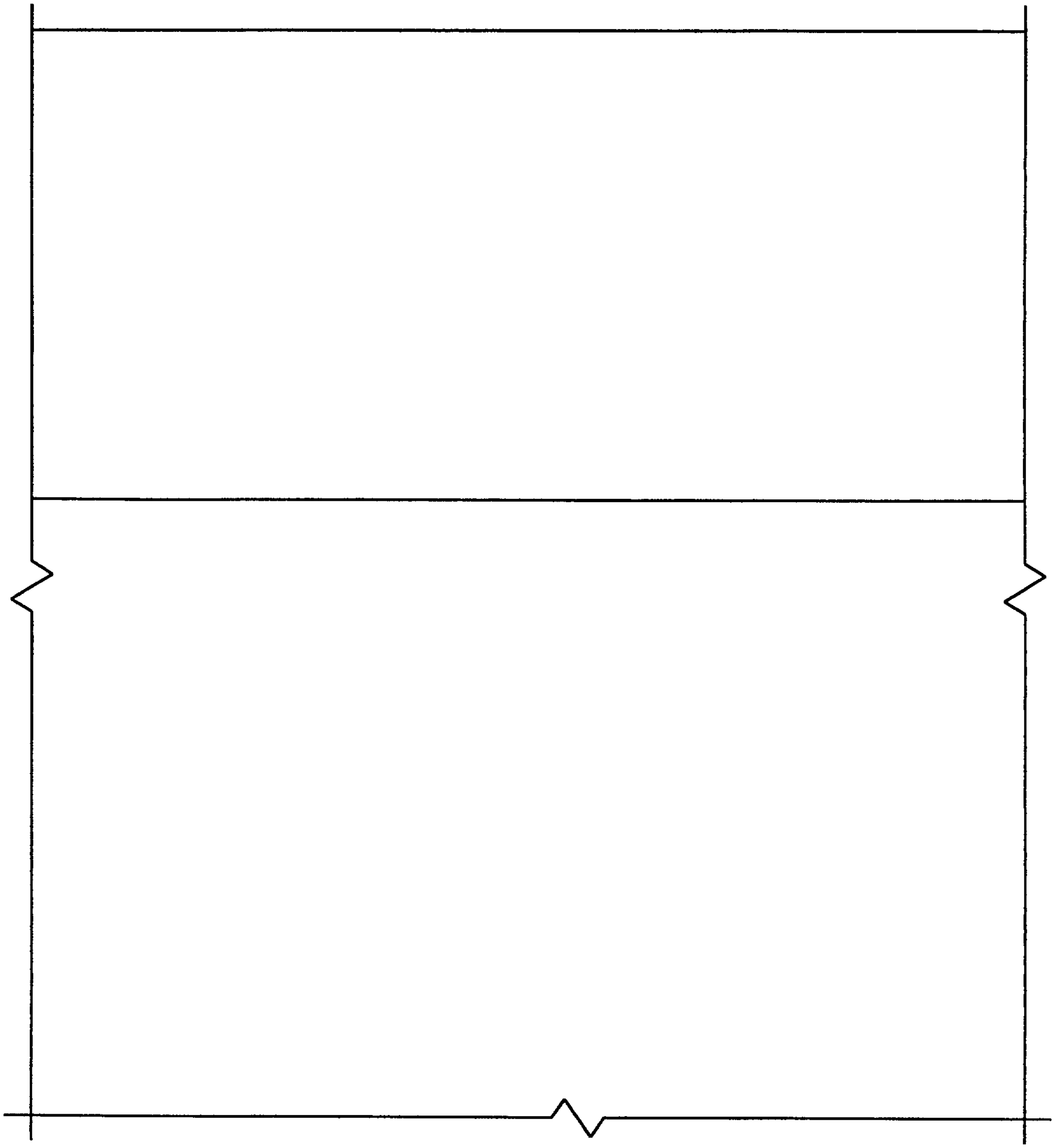


Fig 9.0103AK

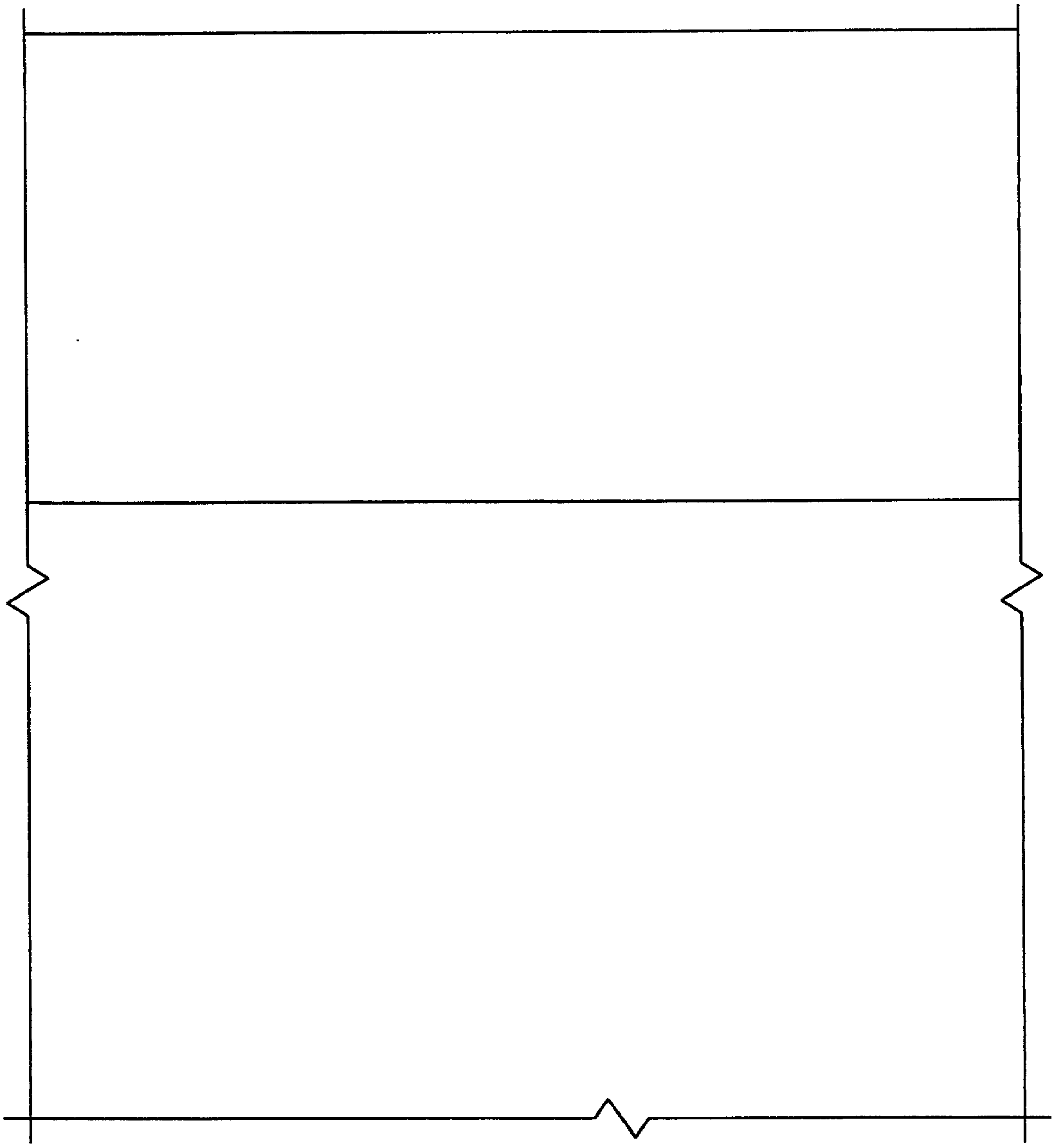


Fig 9.0103AL

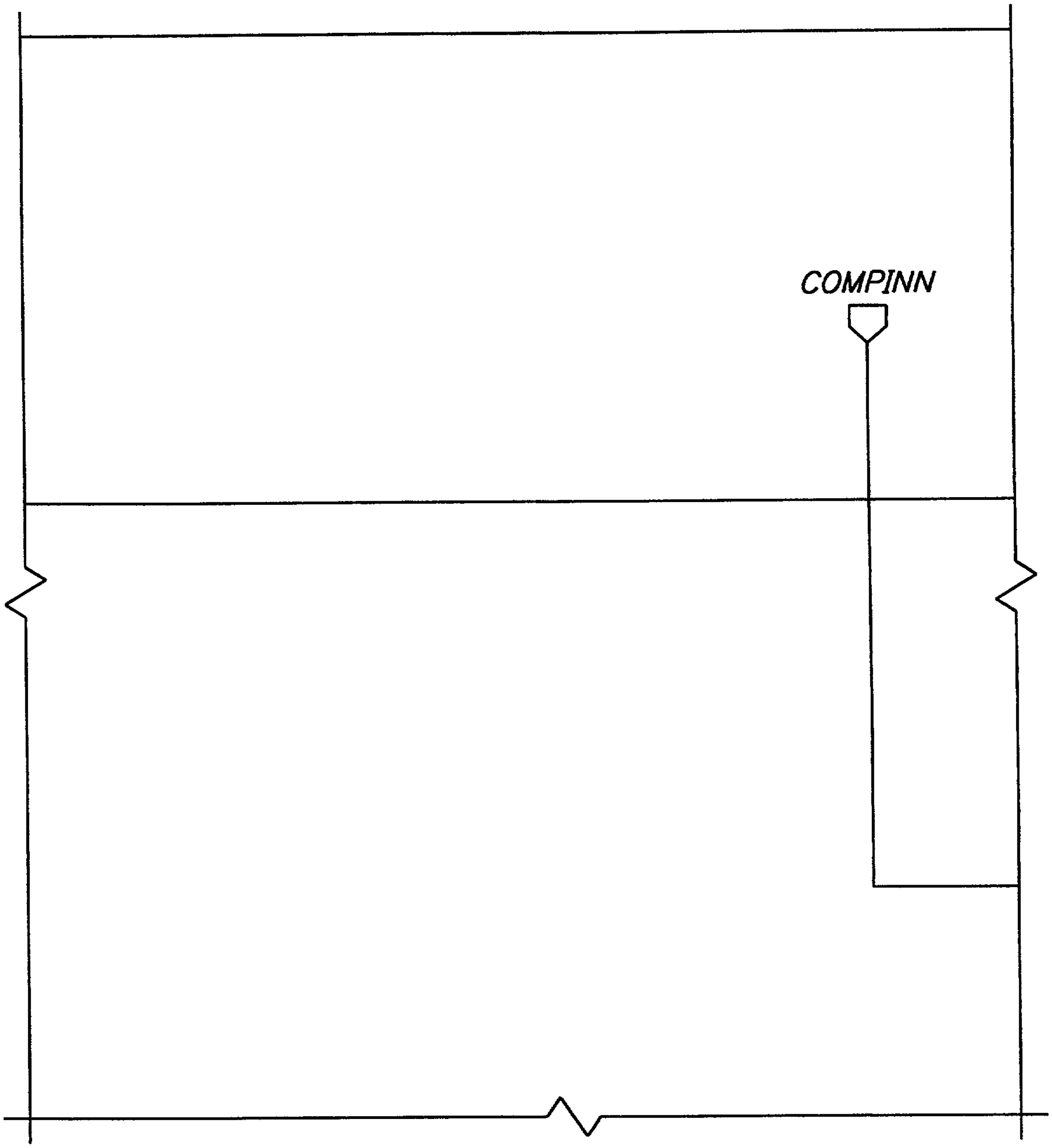


FIG 9.0103AM

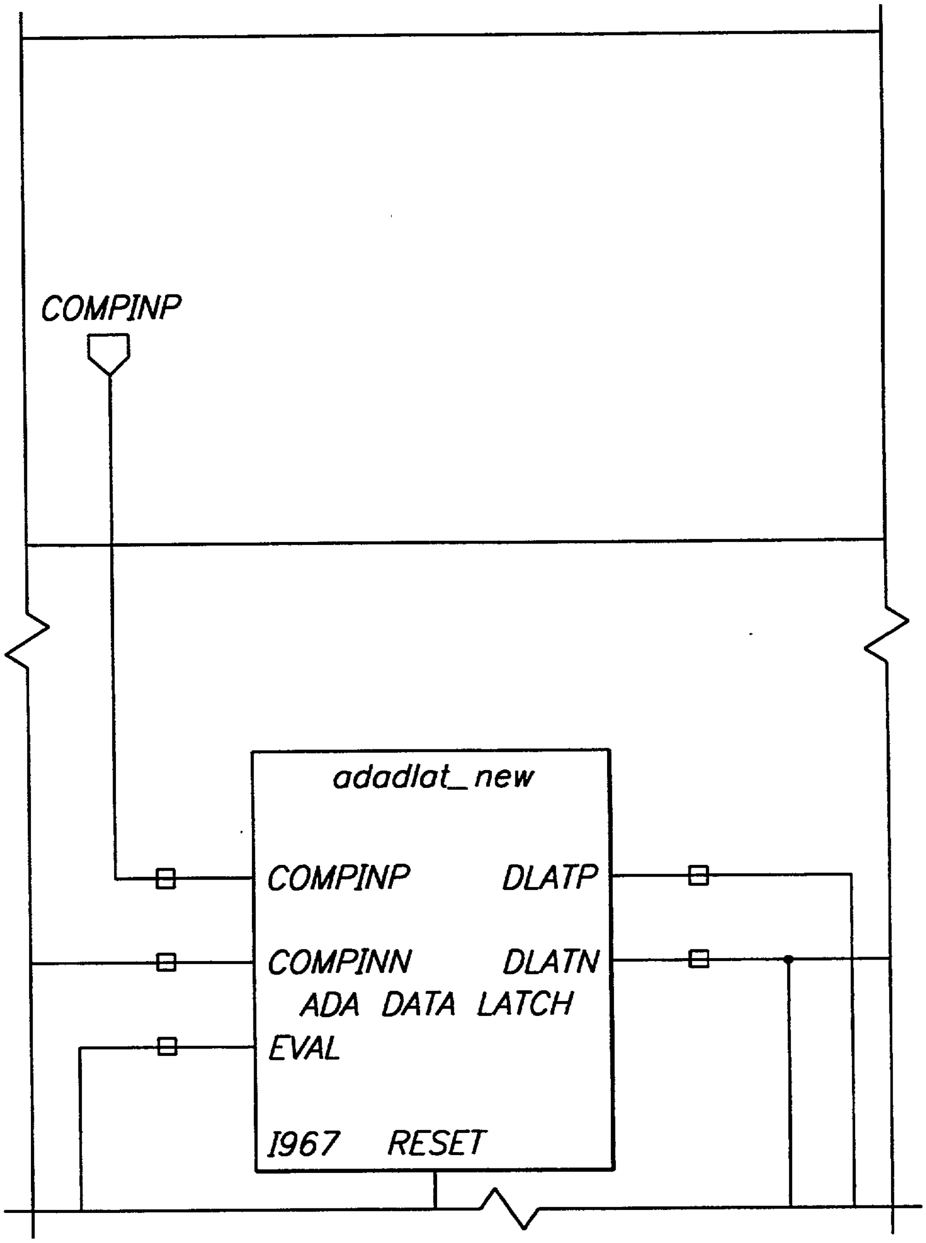

COMPINP
adadlat_new
COMPINP
DLATP
COMPINN
DLATN
ADA DATA LATCH
EVAL
I967
RESET

Fig 9.0103AN

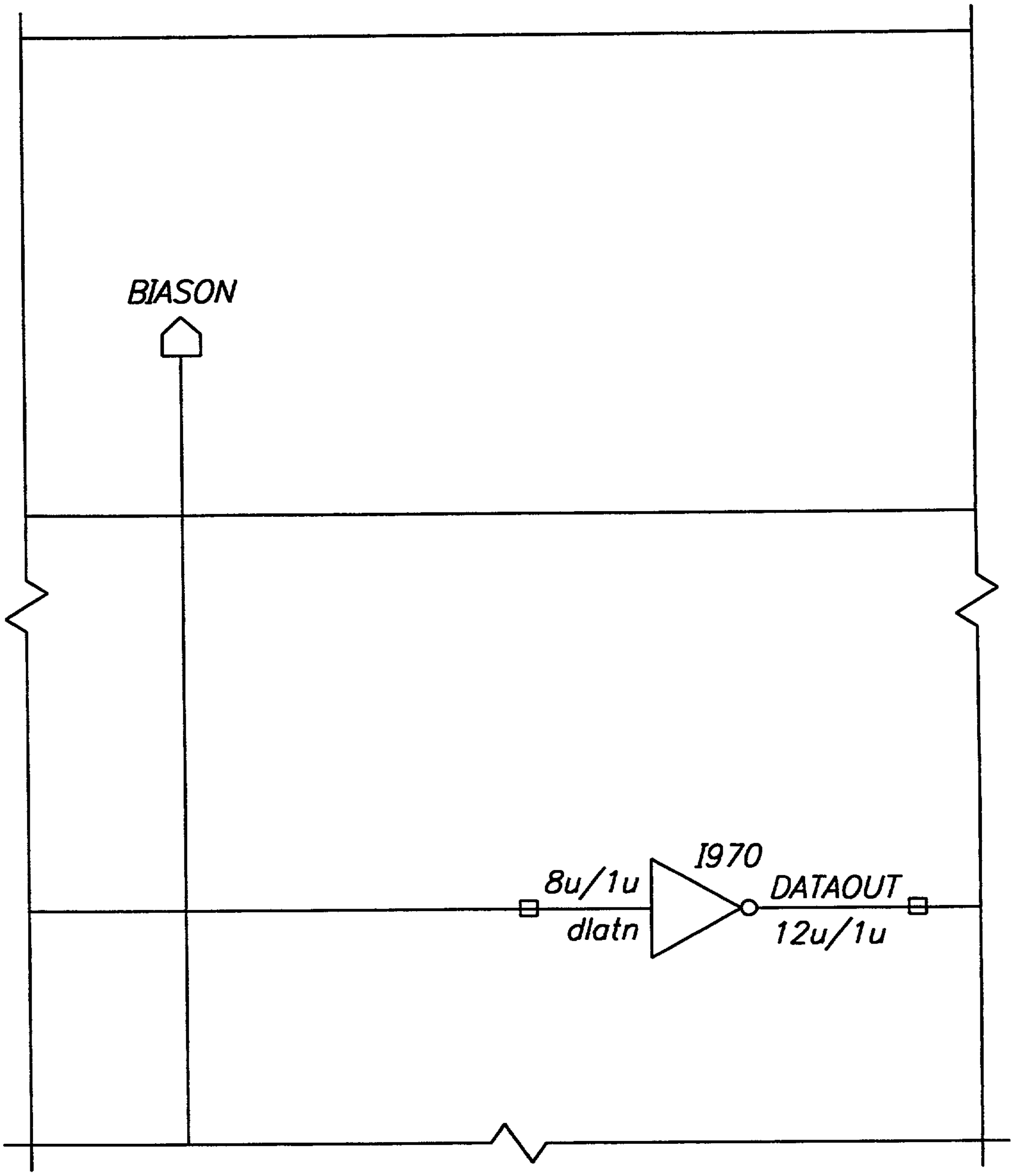


Fig 9.0103A0

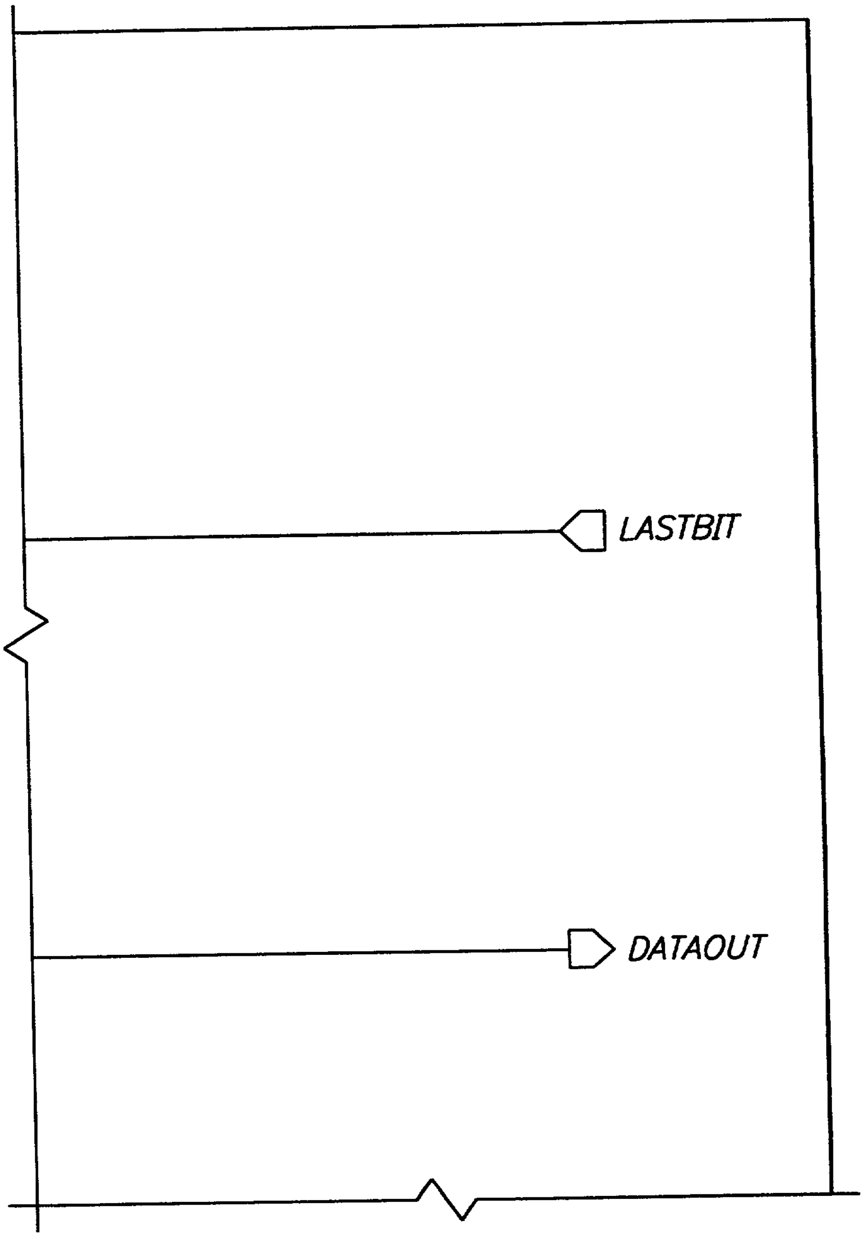


Fig 9.0103AP

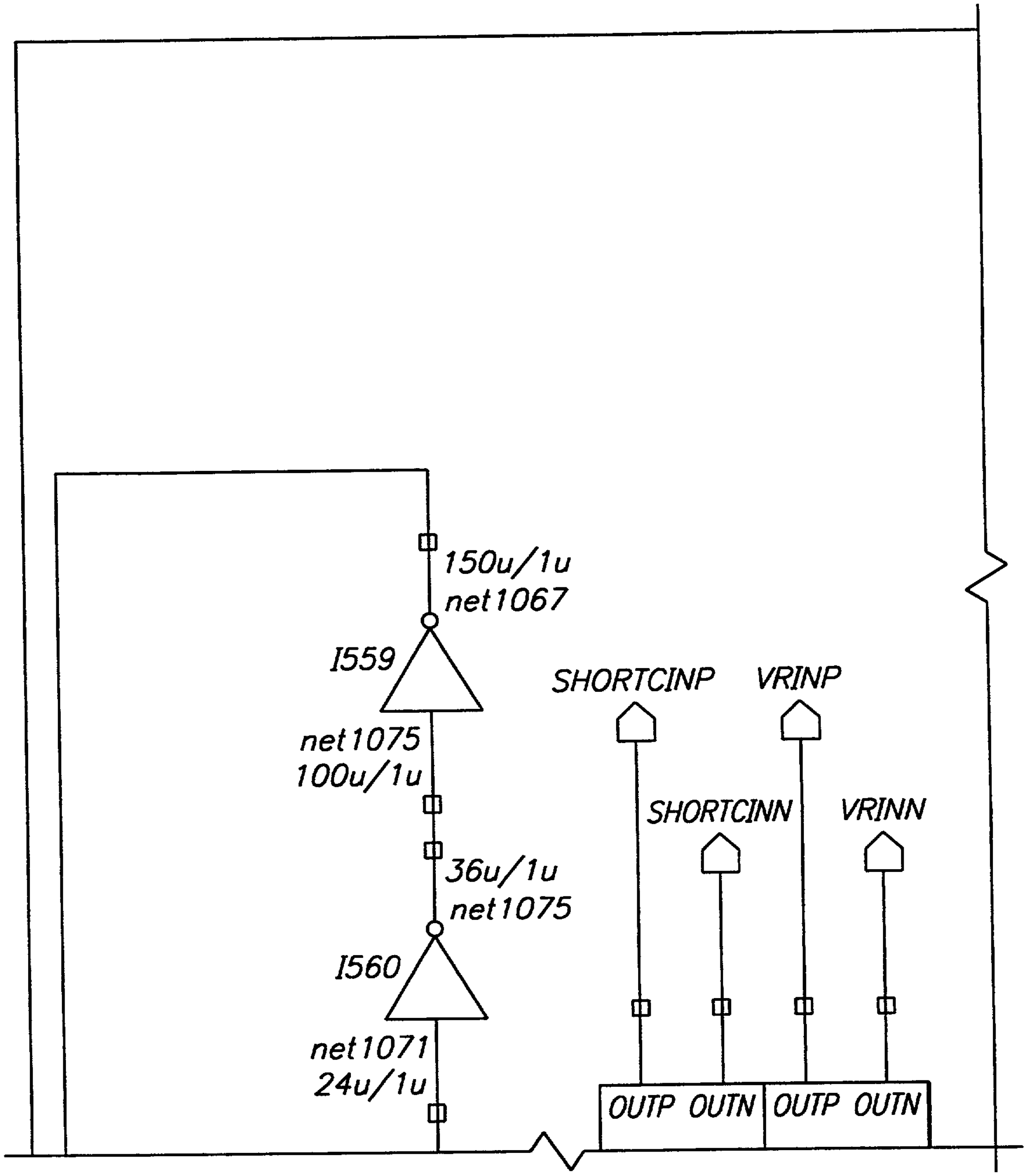

150u/1u
net1067
I559
net1075
100u/1u
36u/1u
net1075
I560
net1071
24u/1u
SHORTCINP
VRINP
SHORTCINN
VRINN
OUTP
OUTN
OUTP
OUTN

Fig 9.0103BA

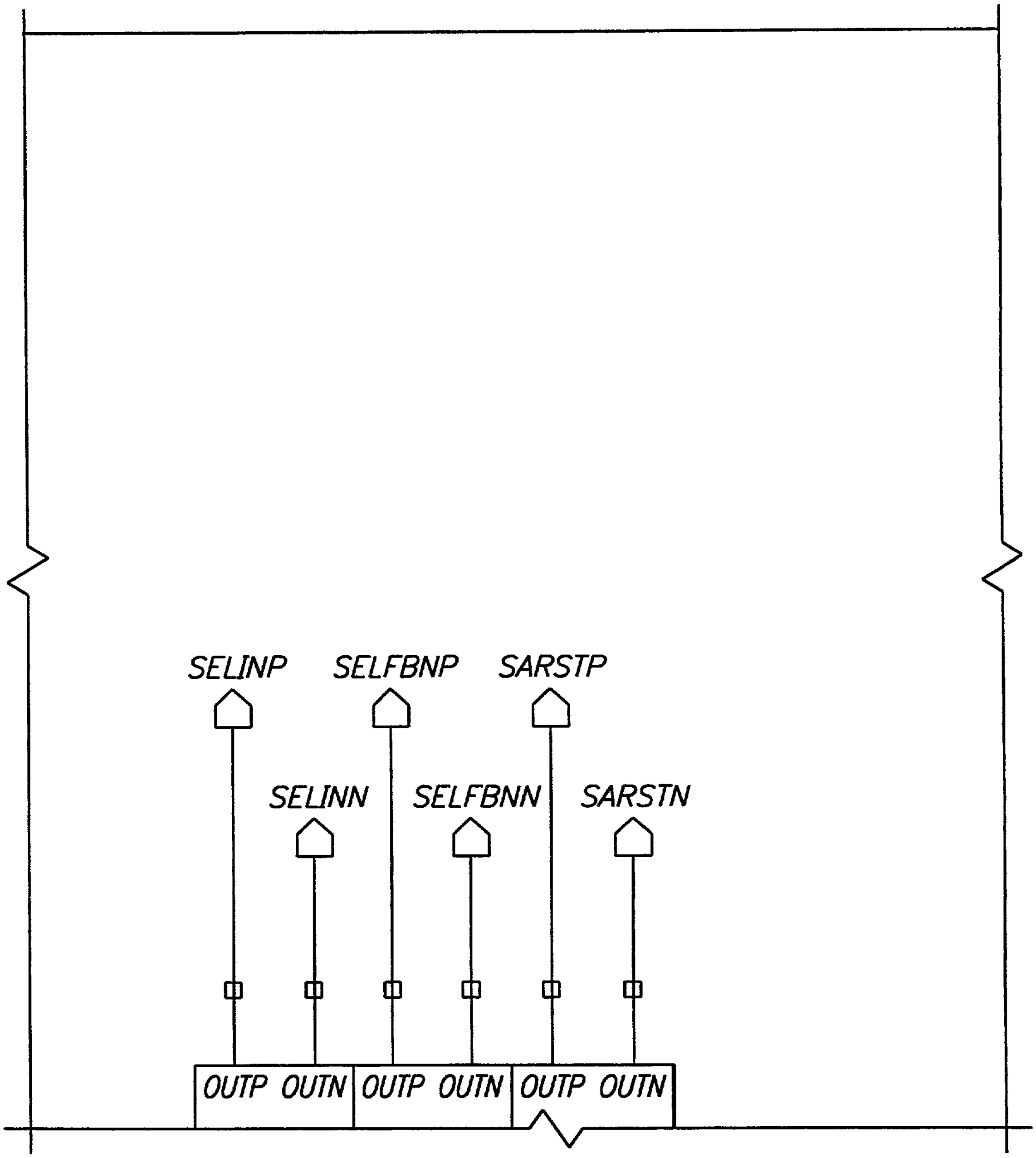

SELINP
SELFBNP
SARSTP
SELINN
SELFBNN
SARSTN
OUTP
OUTN
OUTP
OUTN
OUTP
OUTN

Fig 9.0103BB

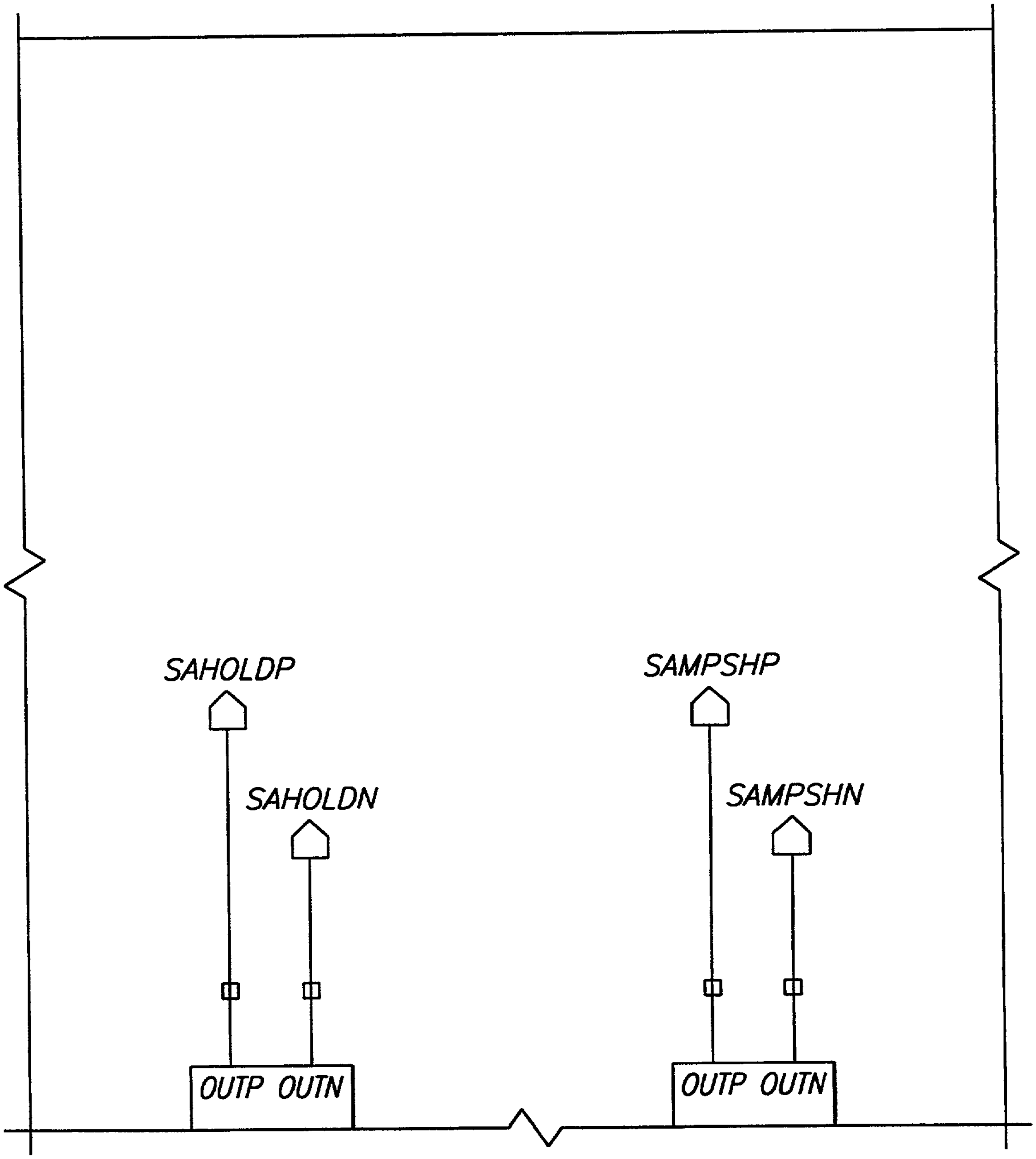


FIG. 9.0103BC

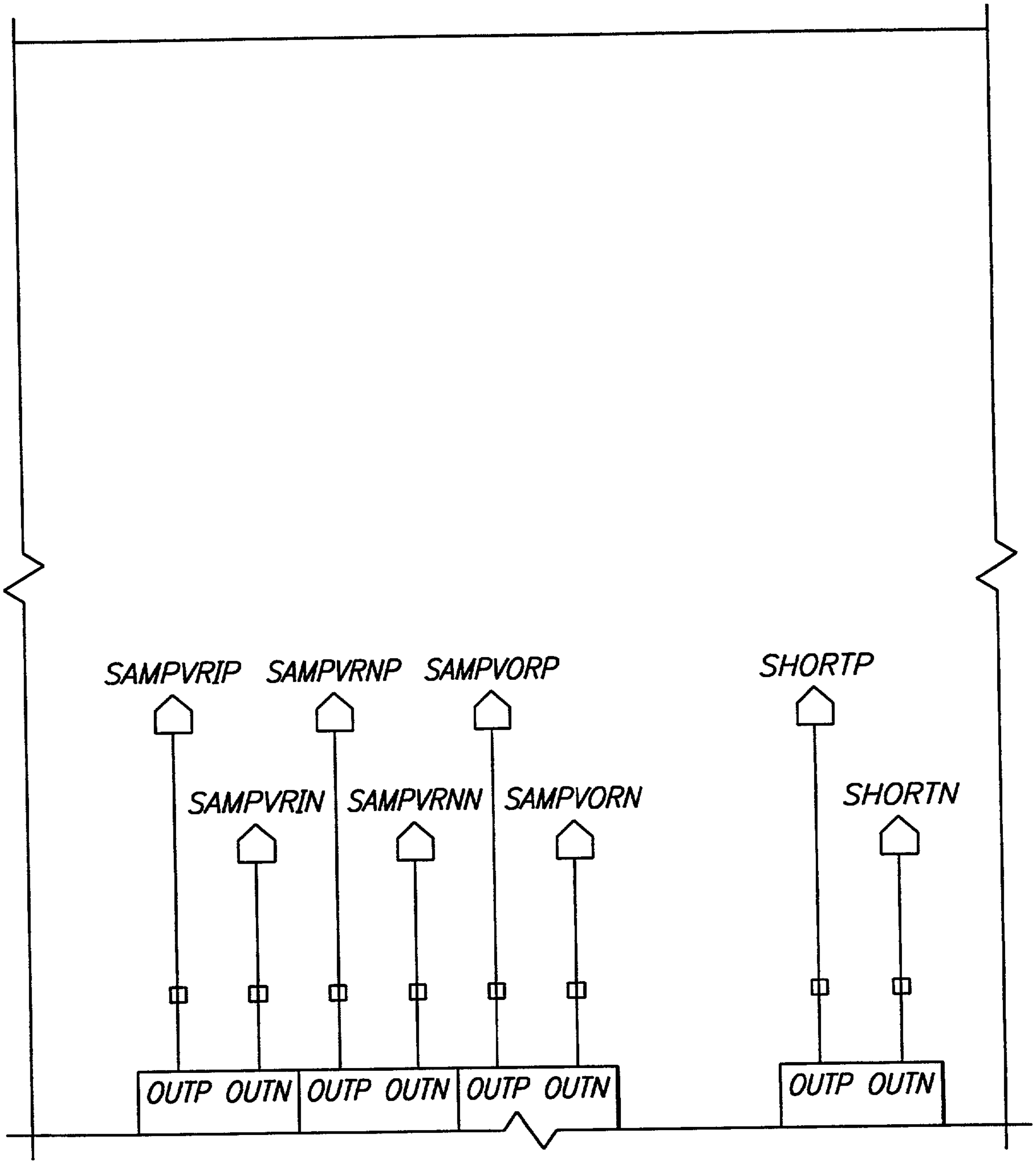

SAMPVRIP
SAMPVRNP
SAMPVORP
SHORTP
SAMPVRIN
SAMPVRNN
SAMPVORN
SHORTN
OUTP
OUTN
OUTP
OUTN
OUTP
OUTN
OUTP
OUTN

Fig 9.0103BD

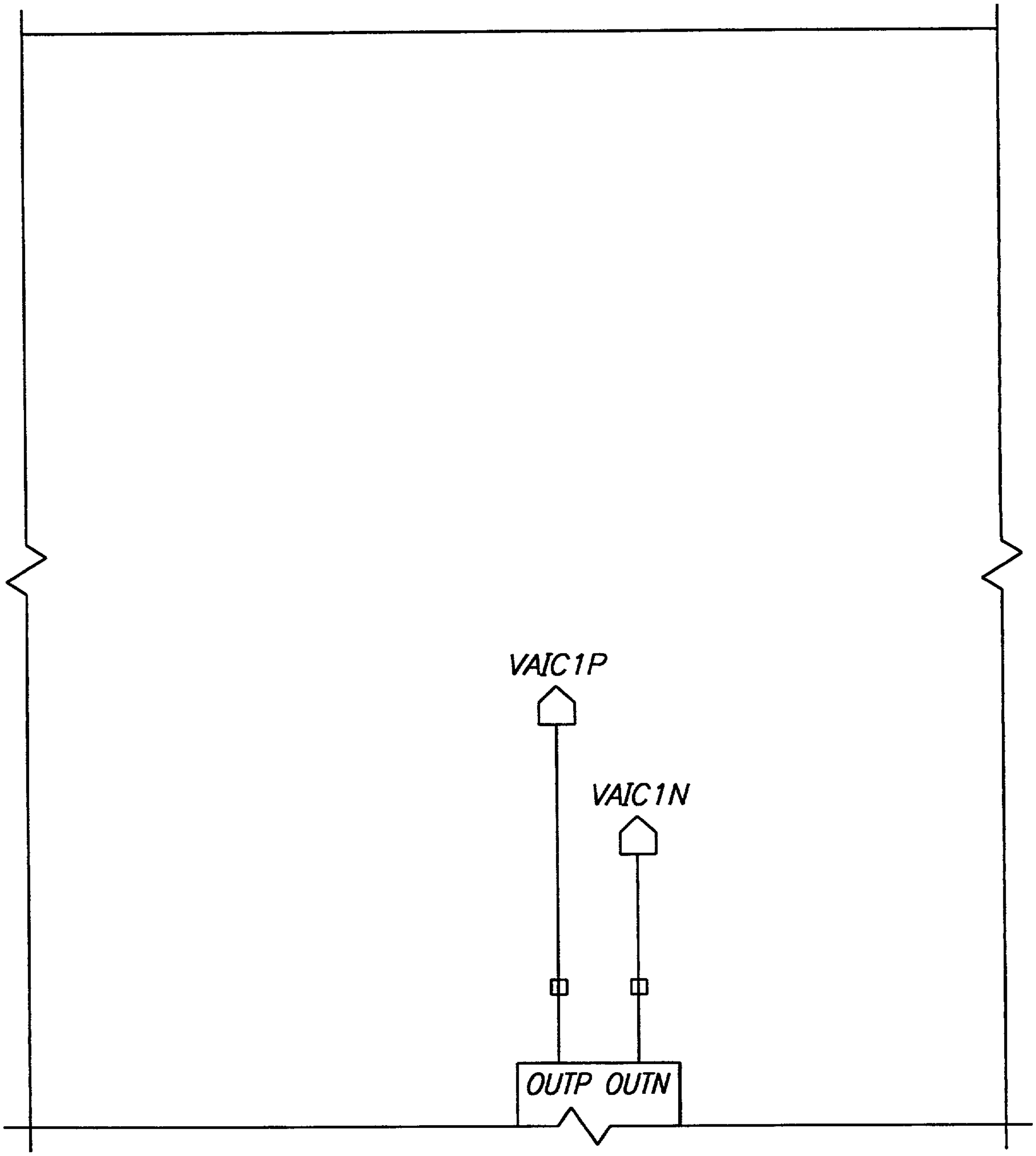


FIG 9.0103BE

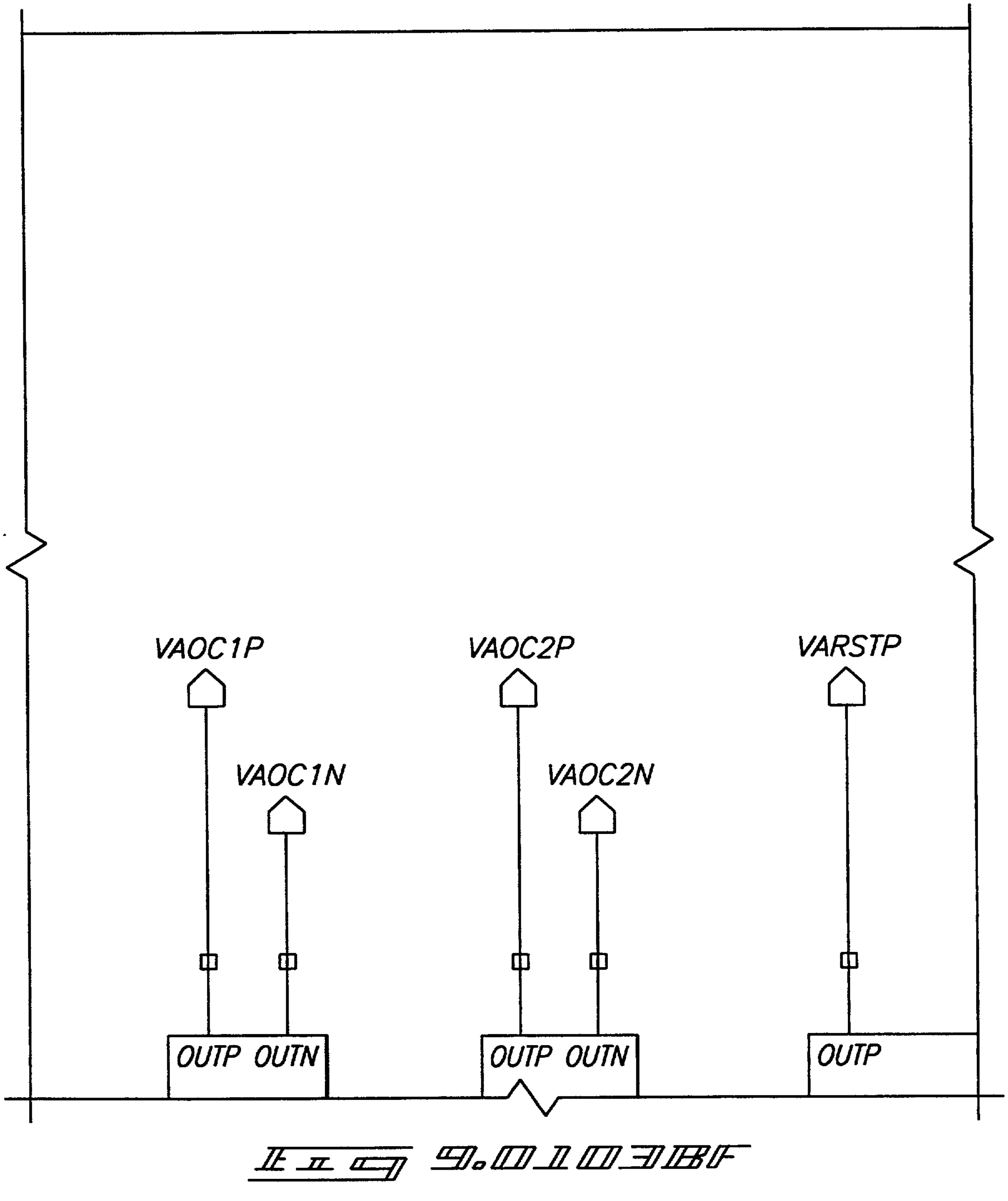

VAOC1P
VAOC1N
VAOC2P
VAOC2N
VARSTP
OUTP
OUTN
OUTP
OUTN
OUTP

Fig 9.0103BF

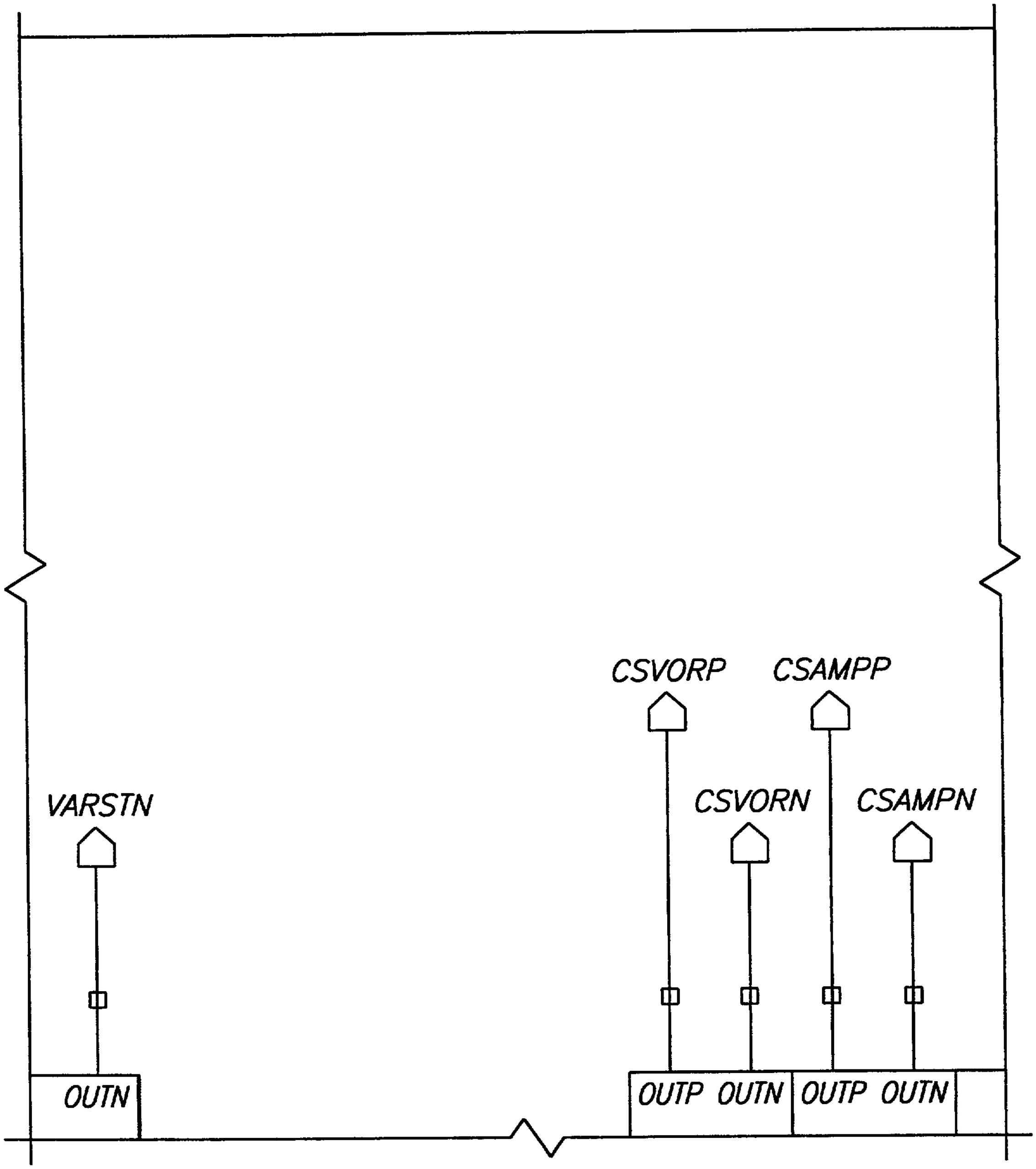

VARSTN
CSVORP
CSAMPP
CSVORN
CSAMPN
OUTN
OUTP
OUTN
OUTP
OUTN

Fig 9.0103BG

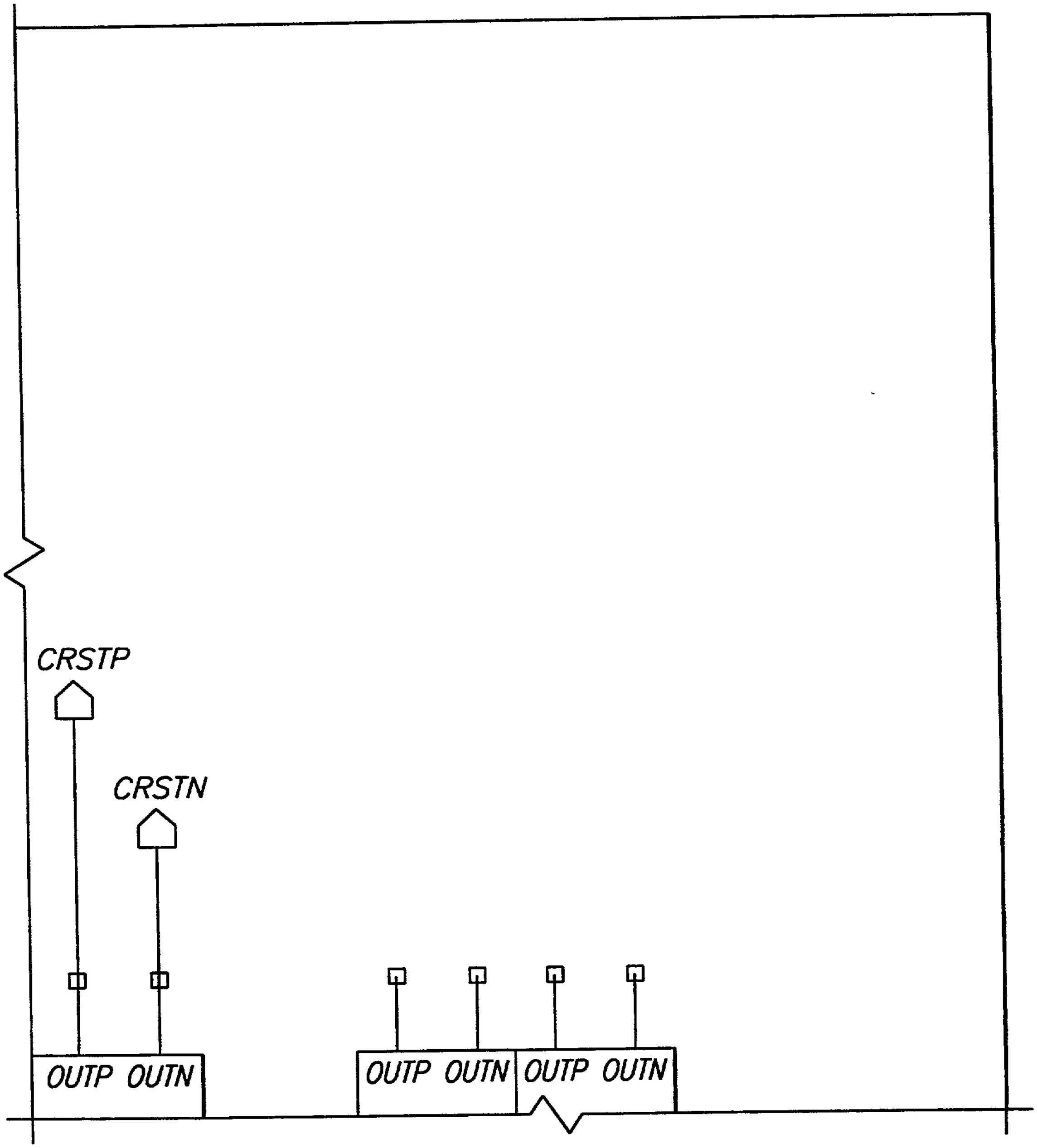


FIG 9.0103BH

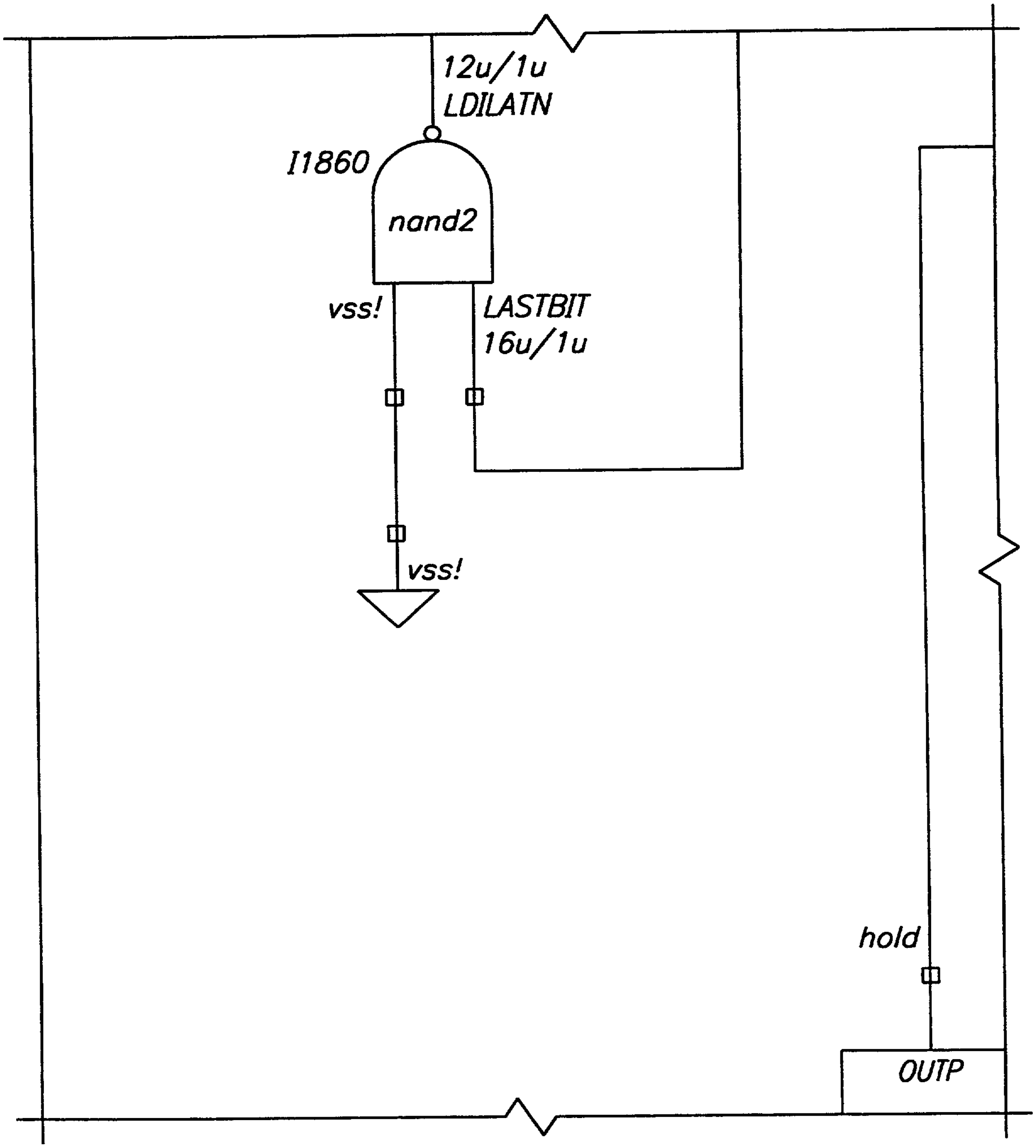


Fig 9.0103Bd

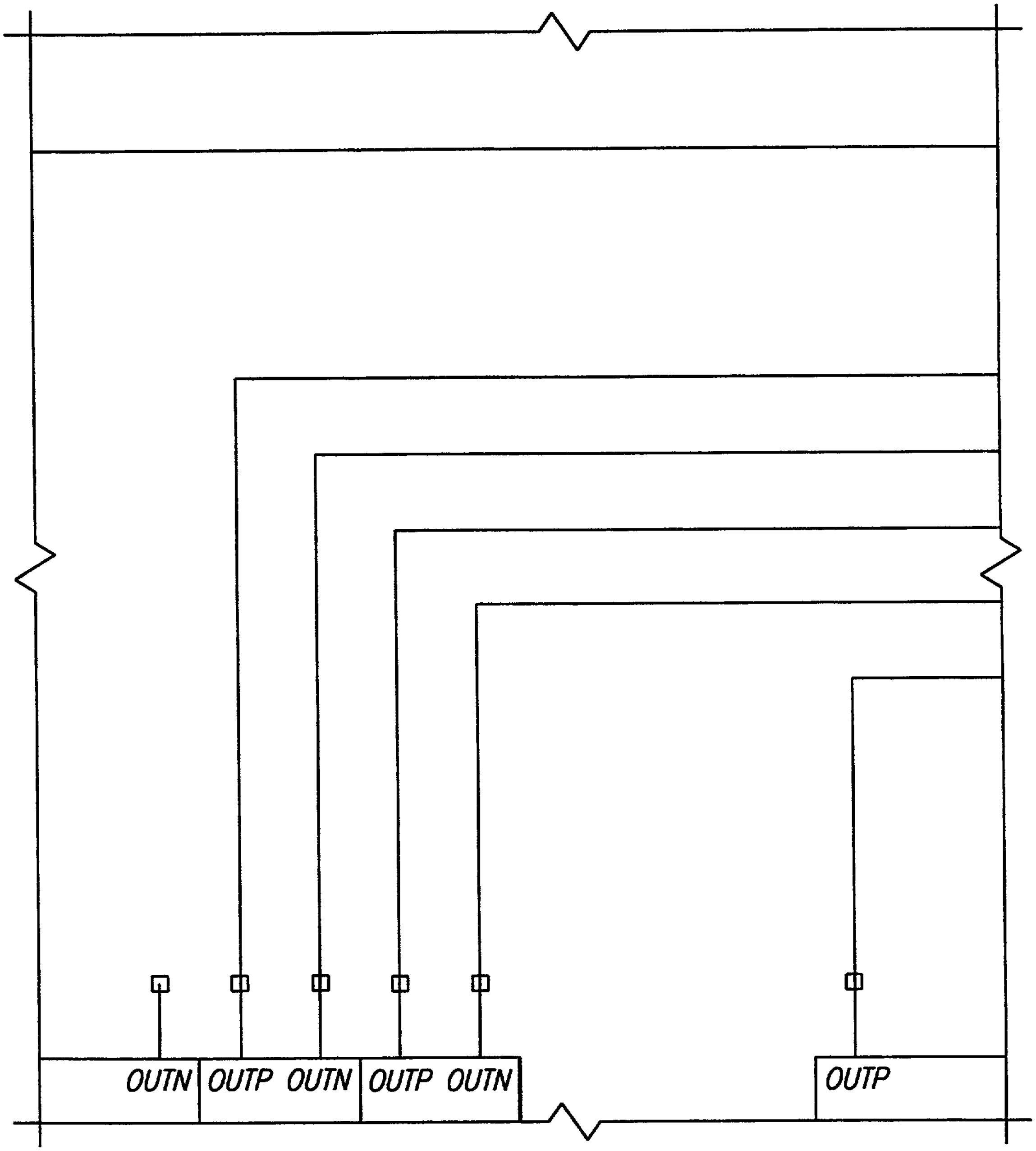


Fig 9.0103BK

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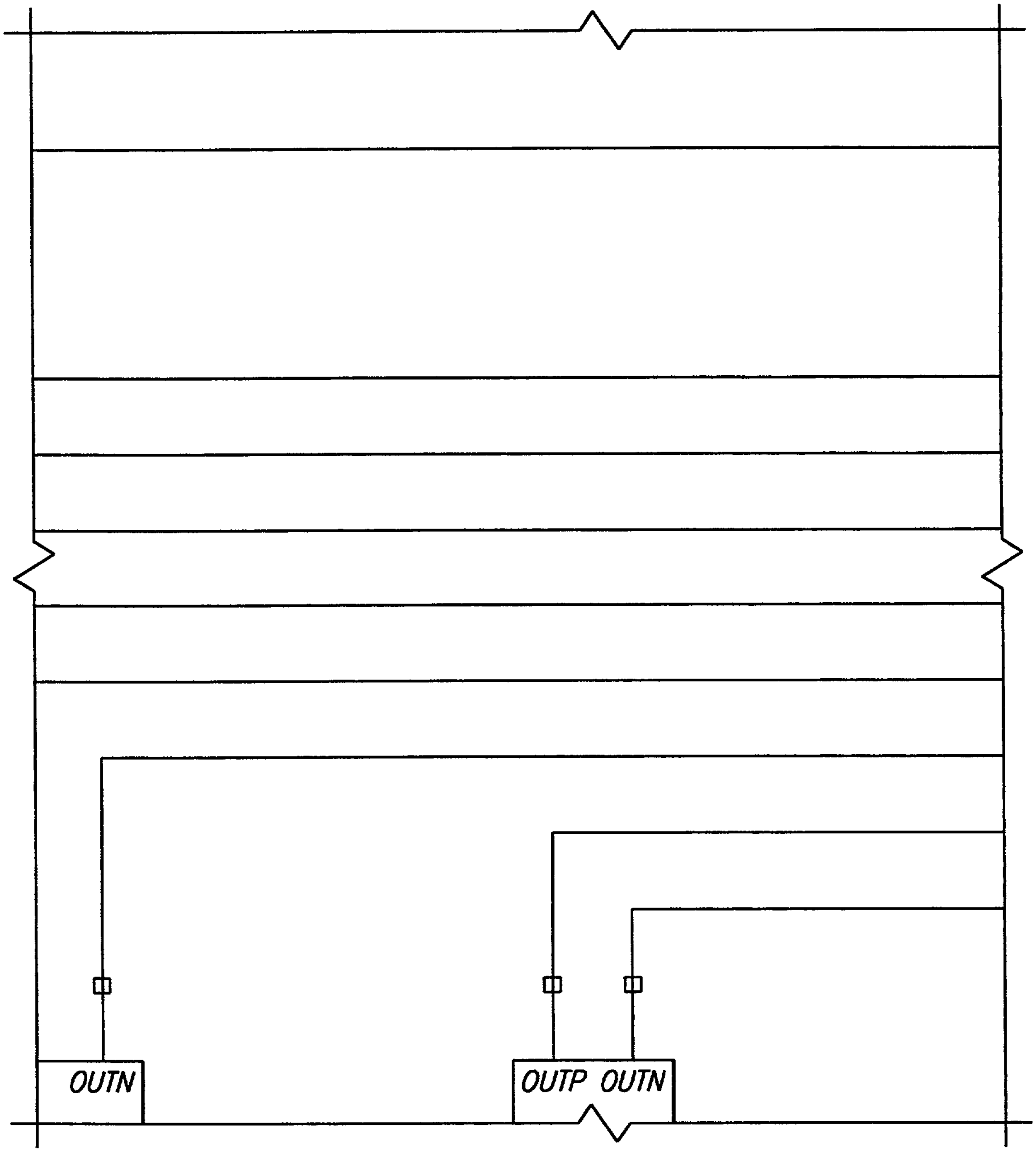


Fig 9.0103BL.

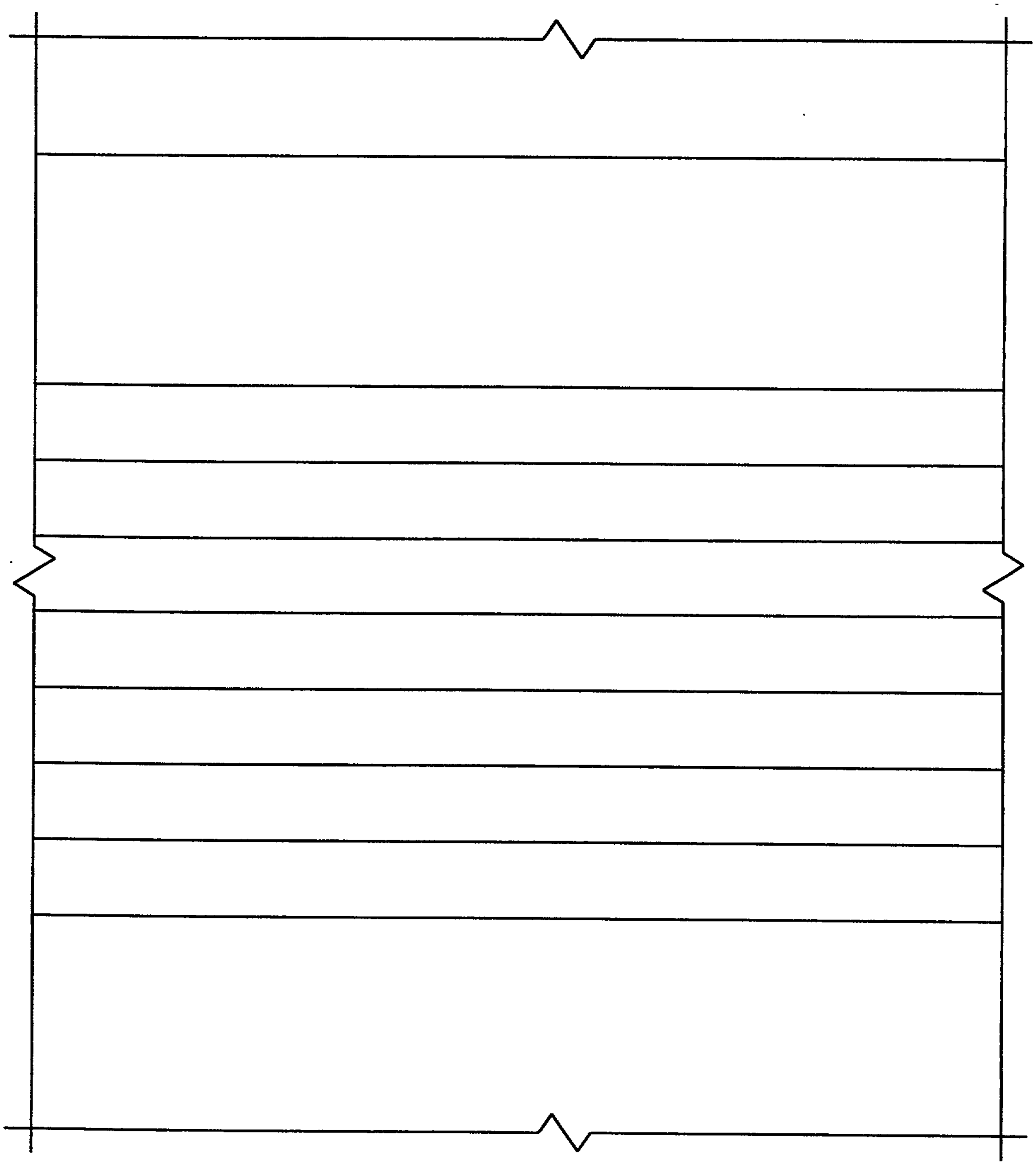


Fig 9.0103BM

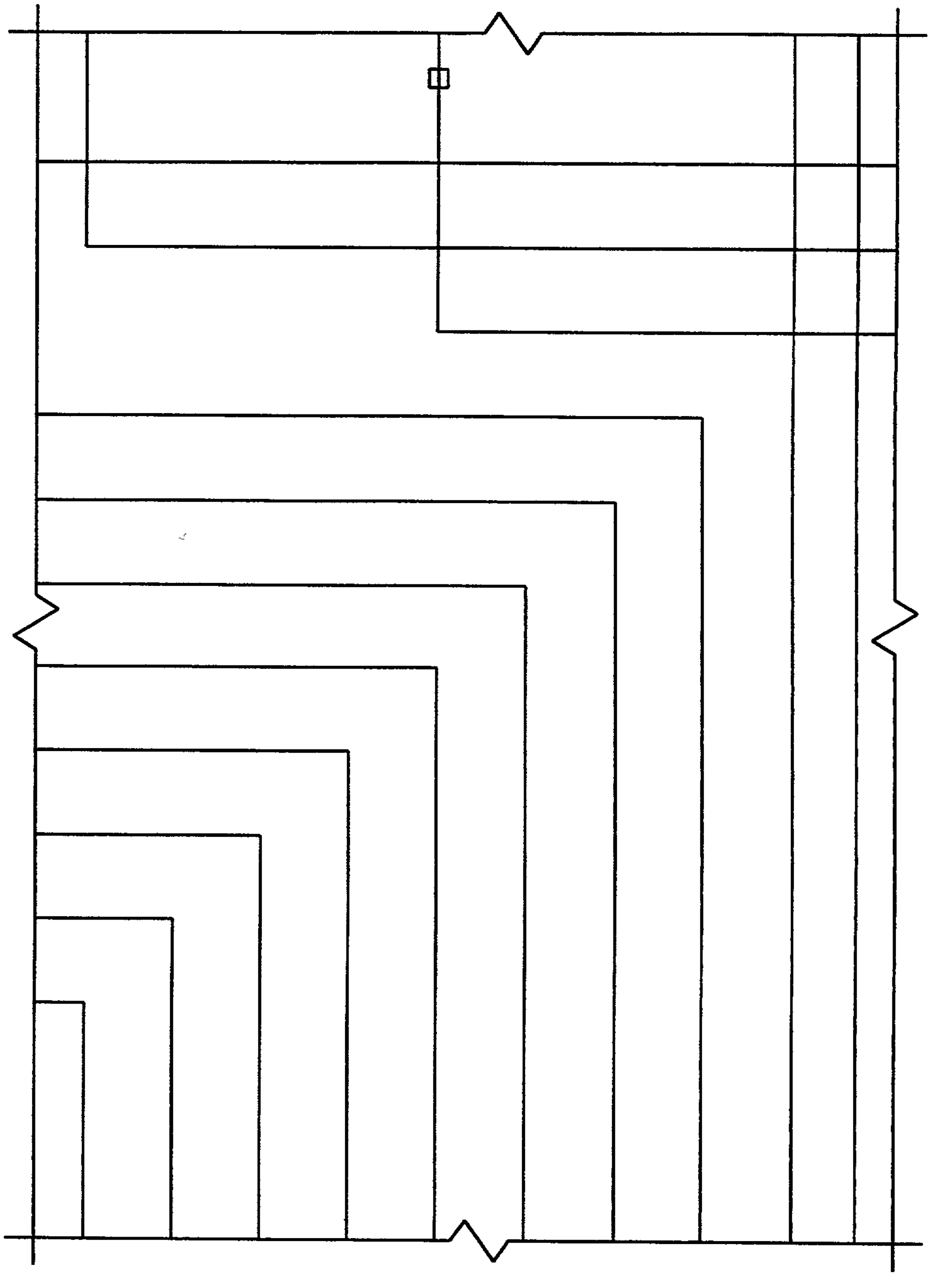


Fig 9.0103BN

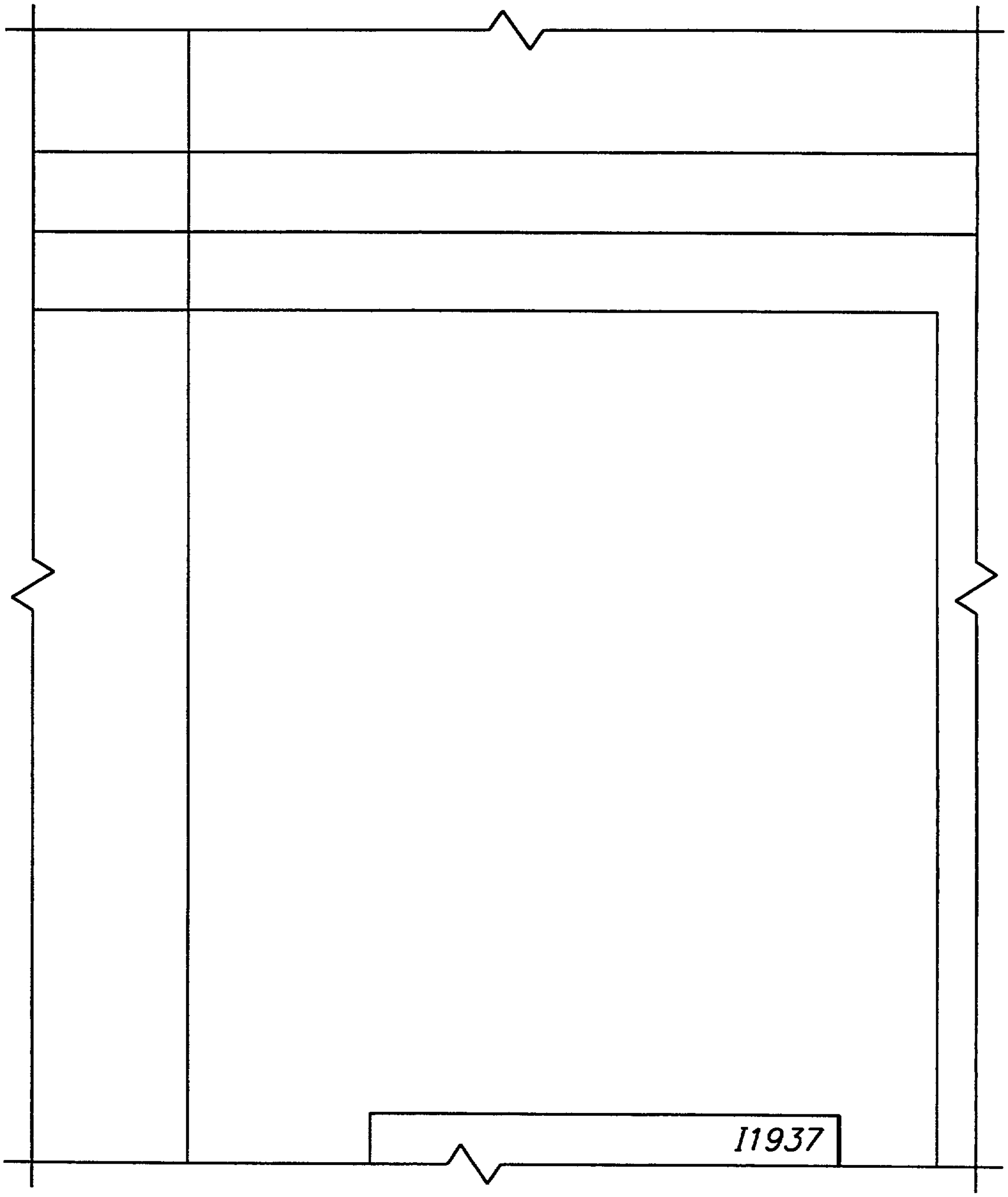


Fig 9.0103BD

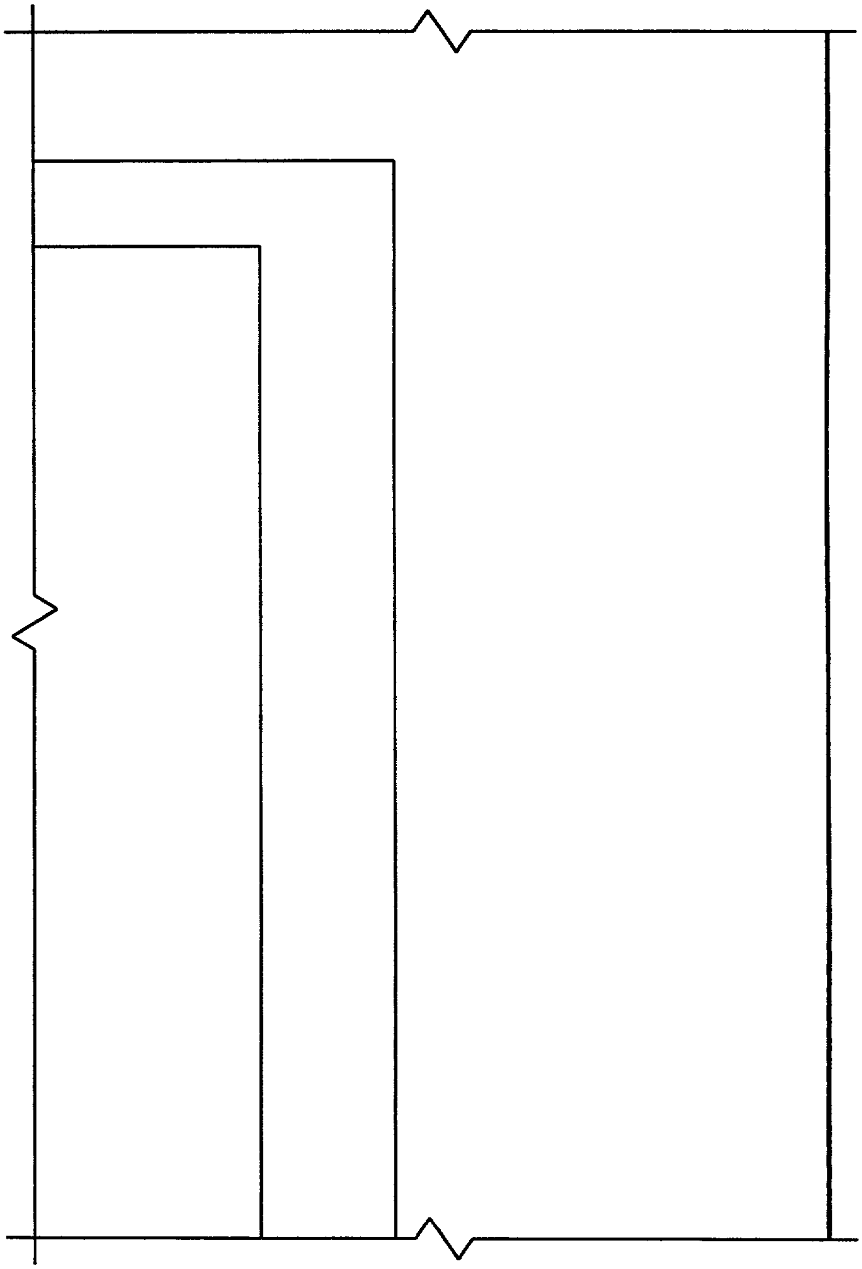


Fig 9.0103BP

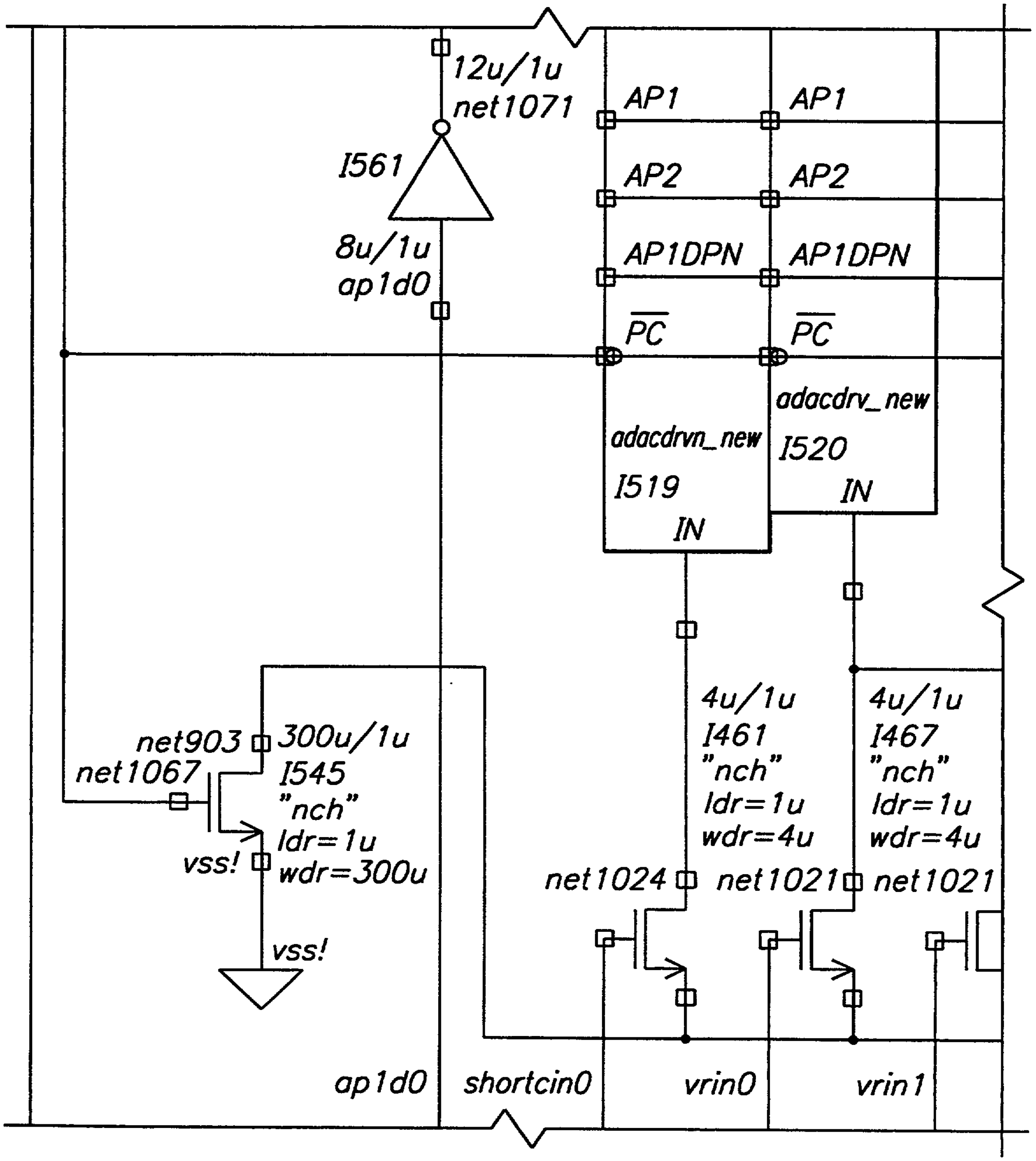

12u/1u
net1071
I561
8u/1u
ap1d0
AP1
AP2
AP1DPN
$\overline{PC}$
adacdrvn_new
I519
IN
AP1
AP2
AP1DPN
$\overline{PC}$
adacdrv_new
I520
IN
net903
net1067
300u/1u
I545
"nch"
ldr=1u
wdr=300u
vss!
vss!
4u/1u
I461
"nch"
ldr=1u
wdr=4u
net1024
4u/1u
I467
"nch"
ldr=1u
wdr=4u
net1021
net1021
ap1d0
shortcin0
vrin0
vrin1

Fig 9.01.03CA

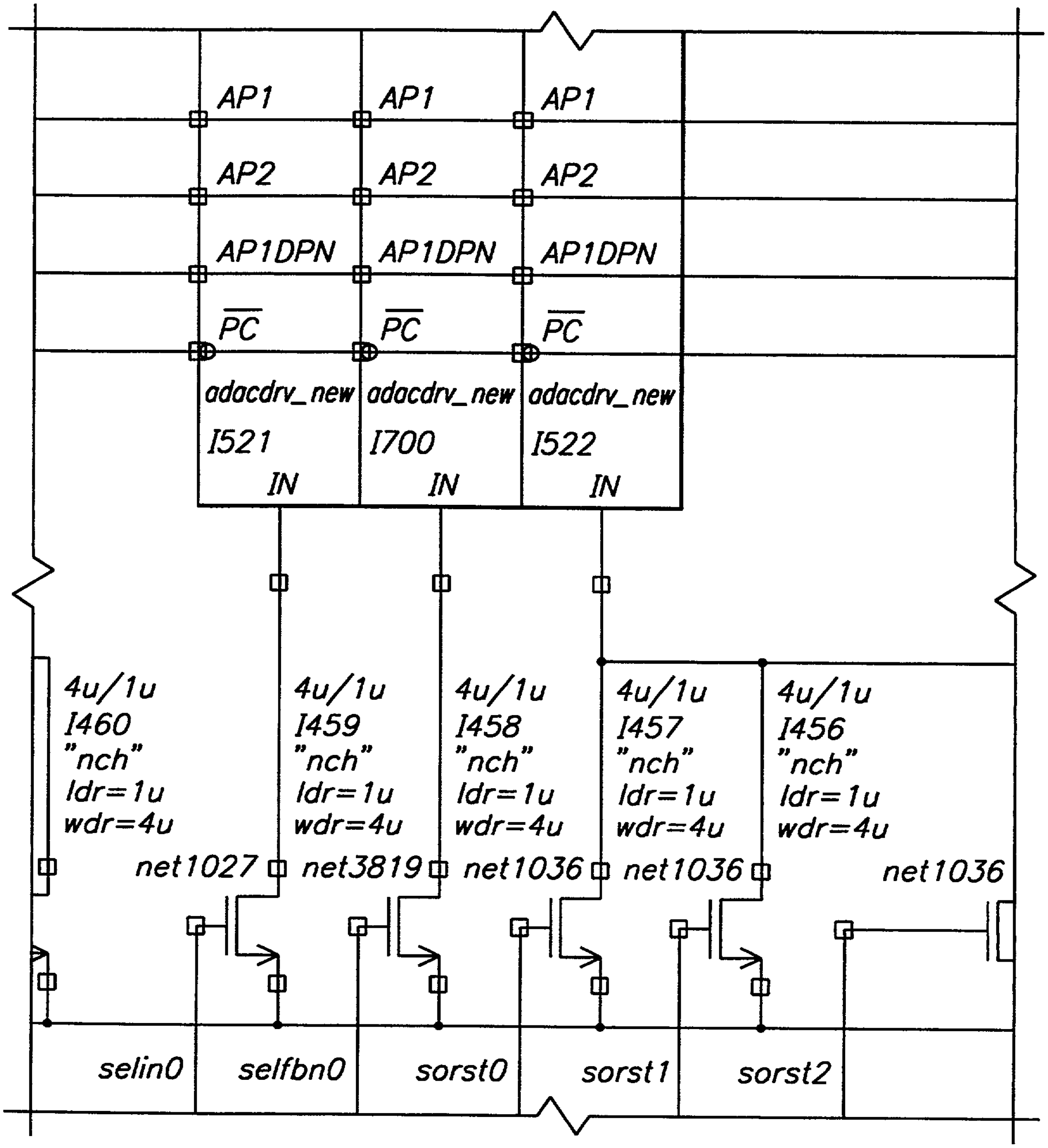

AP1
AP1
AP1
AP2
AP2
AP2
AP1DPN
AP1DPN
AP1DPN
$\overline{PC}$
$\overline{PC}$
$\overline{PC}$
adacdrv_new
adacdrv_new
adacdrv_new
I521
I700
I522
IN
IN
IN
4u/1u
I460
"nch"
ldr=1u
wdr=4u
4u/1u
I459
"nch"
ldr=1u
wdr=4u
4u/1u
I458
"nch"
ldr=1u
wdr=4u
4u/1u
I457
"nch"
ldr=1u
wdr=4u
4u/1u
I456
"nch"
ldr=1u
wdr=4u
net1027
net3819
net1036
net1036
net1036
selin0
selfbn0
sorst0
sorst1
sorst2

Fig 9.0103CB

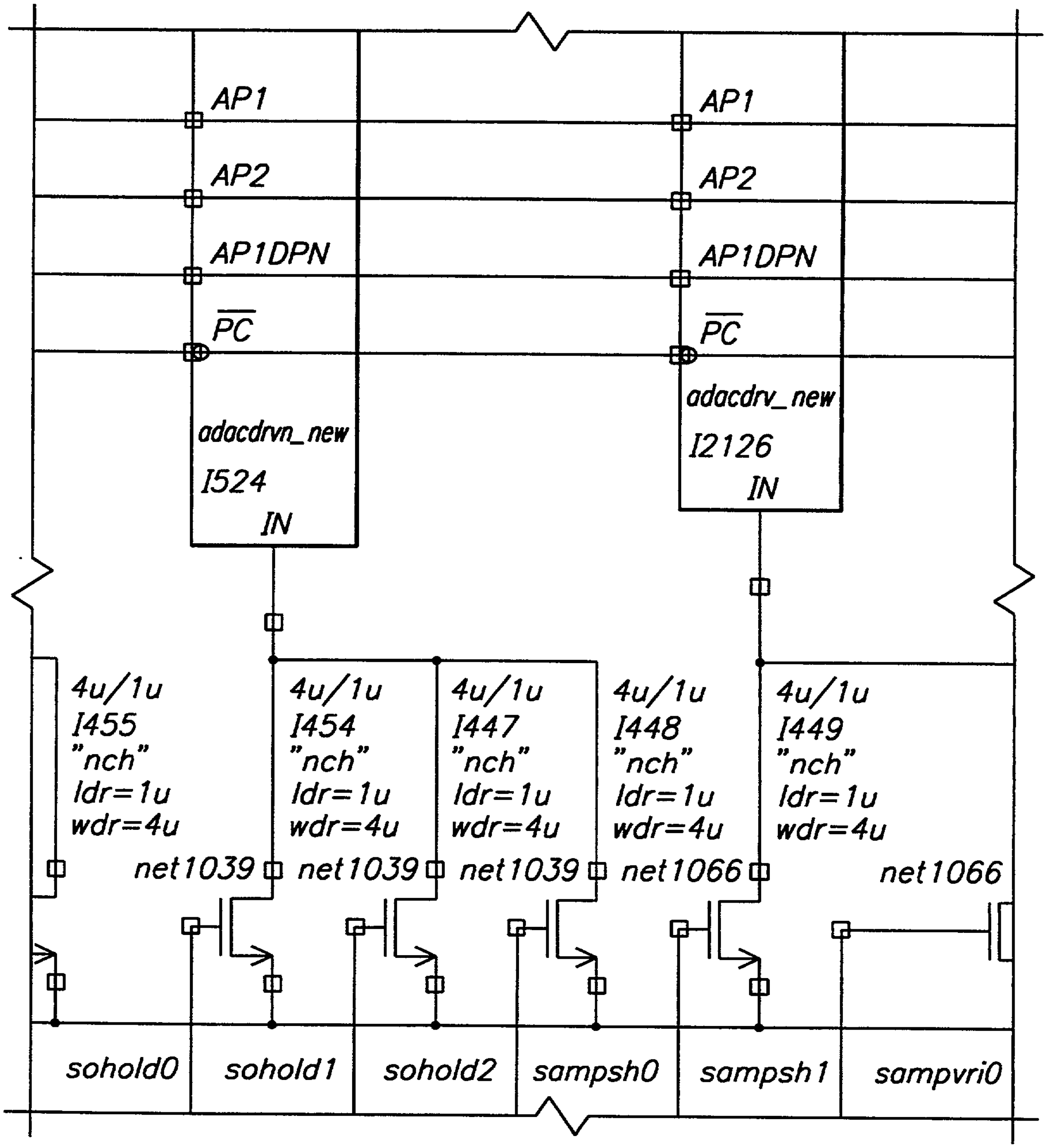

AP1
AP2
AP1DPN
$\overline{PC}$
adacdrvn_new
I524
IN
AP1
AP2
AP1DPN
$\overline{PC}$
adacdrv_new
I2126
IN
4u/1u
I455
"nch"
ldr=1u
wdr=4u
4u/1u
I454
"nch"
ldr=1u
wdr=4u
4u/1u
I447
"nch"
ldr=1u
wdr=4u
4u/1u
I448
"nch"
ldr=1u
wdr=4u
4u/1u
I449
"nch"
ldr=1u
wdr=4u
net1039
net1039
net1039
net1066
net1066
sohold0
sohold1
sohold2
sampsh0
sampsh1
sampvri0

Fig 9.0103CC

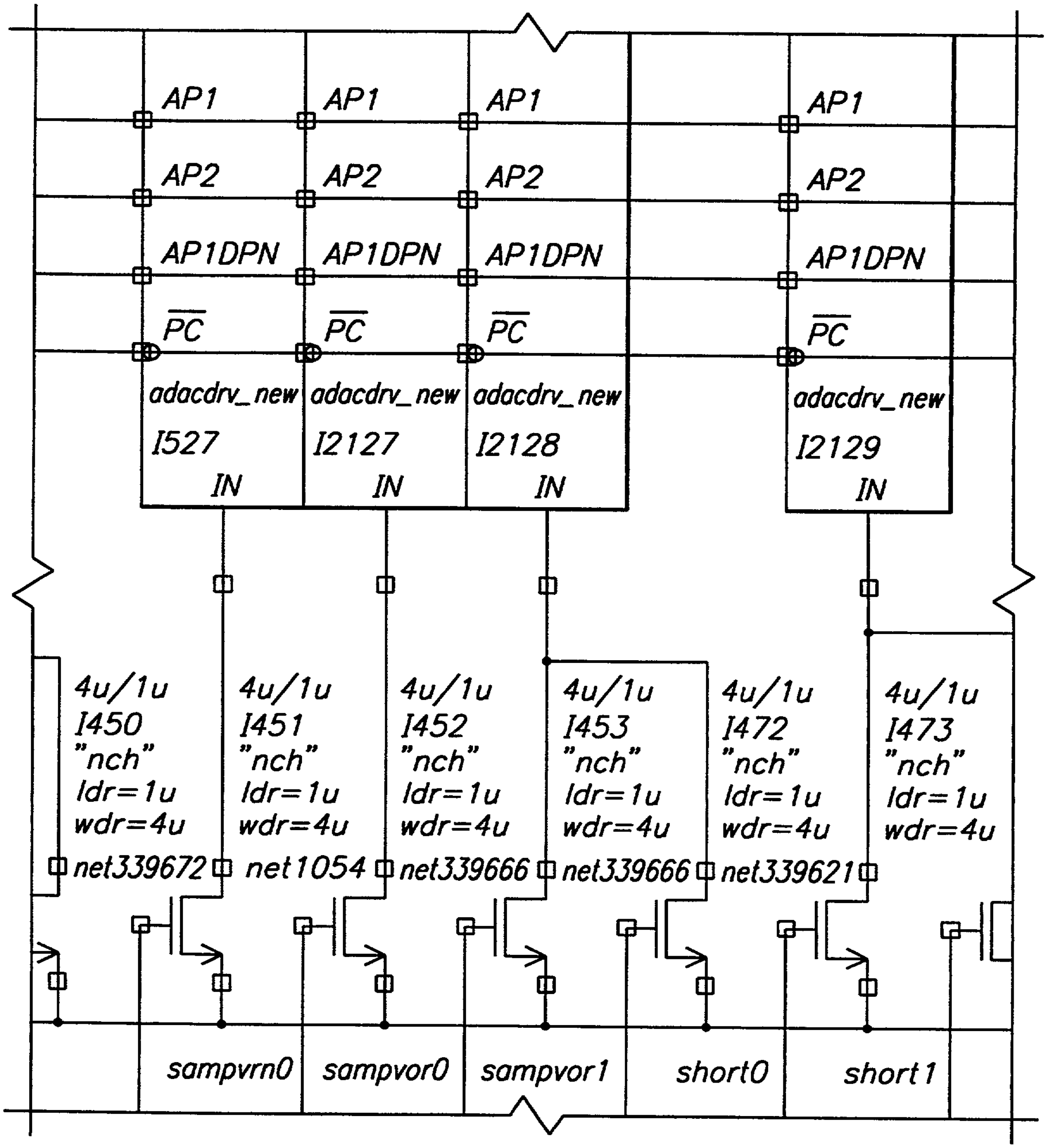

AP1
AP2
AP1DPN
$\overline{PC}$
adacdrv_new
I527
I2127
I2128
I2129
IN
4u/1u
I450
I451
I452
I453
I472
I473
"nch"
ldr=1u
wdr=4u
net339672
net1054
net339666
net339621
sampvrn0
sampvor0
sampvor1
short0
short1

Fig 9.0103CD

2309/3273

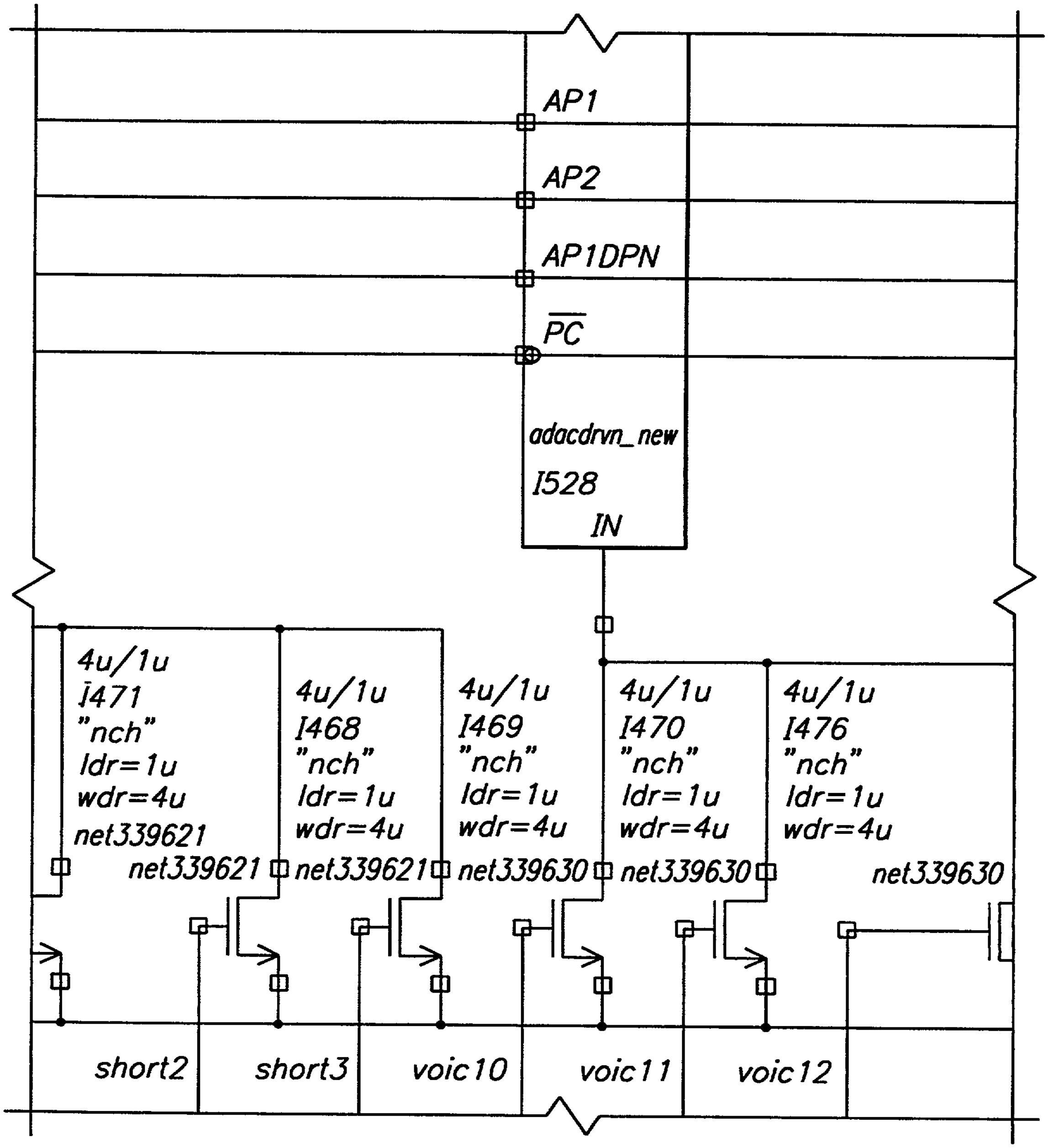


Fig 9.0103CE

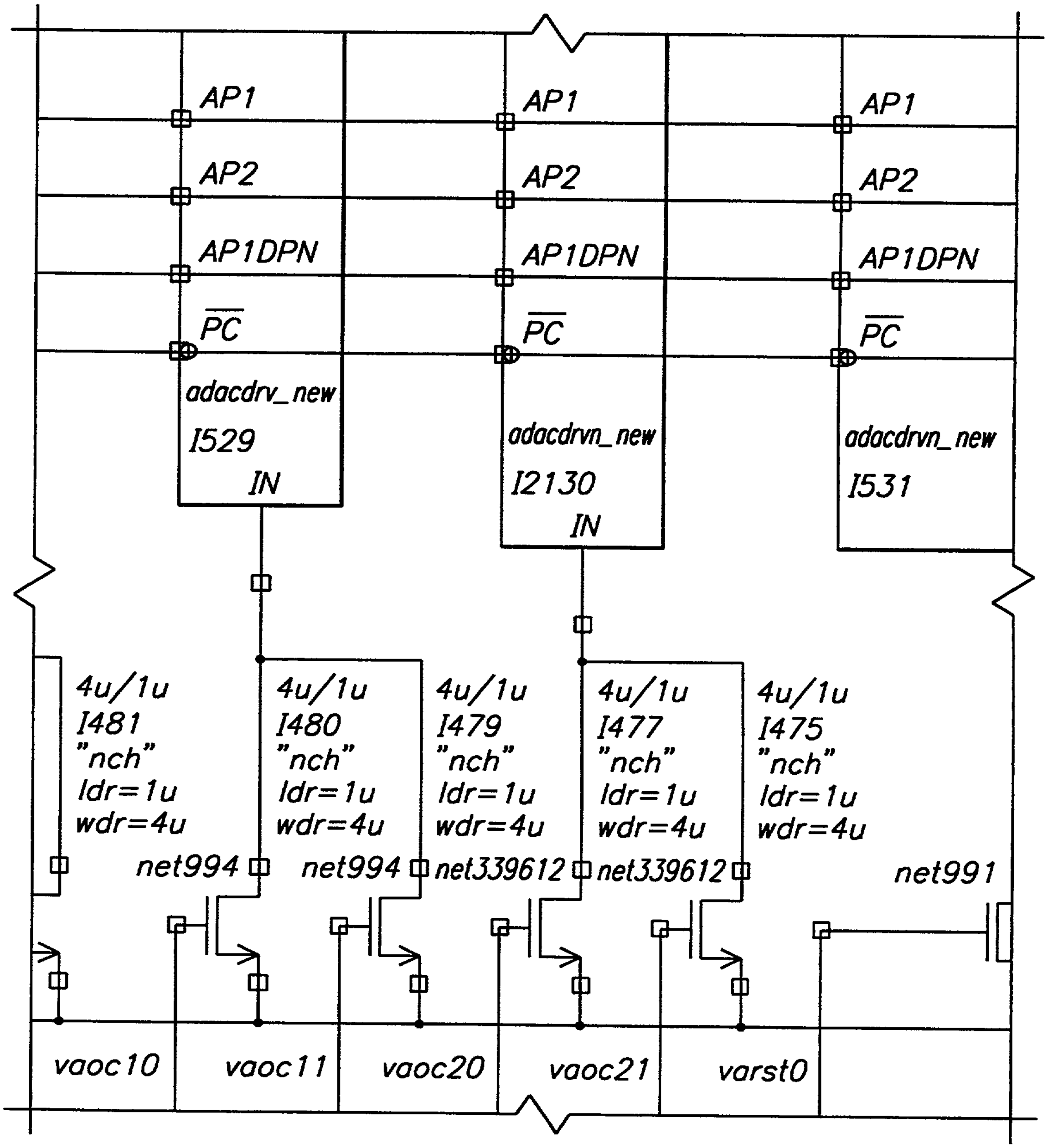

AP1
AP2
AP1DPN
$\overline{PC}$
adacdrv_new
I529
IN
AP1
AP2
AP1DPN
$\overline{PC}$
adacdrvn_new
I2130
IN
AP1
AP2
AP1DPN
$\overline{PC}$
adacdrvn_new
I531
4u/1u
I481
"nch"
ldr=1u
wdr=4u
4u/1u
I480
"nch"
ldr=1u
wdr=4u
4u/1u
I479
"nch"
ldr=1u
wdr=4u
4u/1u
I477
"nch"
ldr=1u
wdr=4u
4u/1u
I475
"nch"
ldr=1u
wdr=4u
net994
net994
net339612
net339612
net991
vaoc10
vaoc11
vaoc20
vaoc21
varst0

Fig 9.0103CF

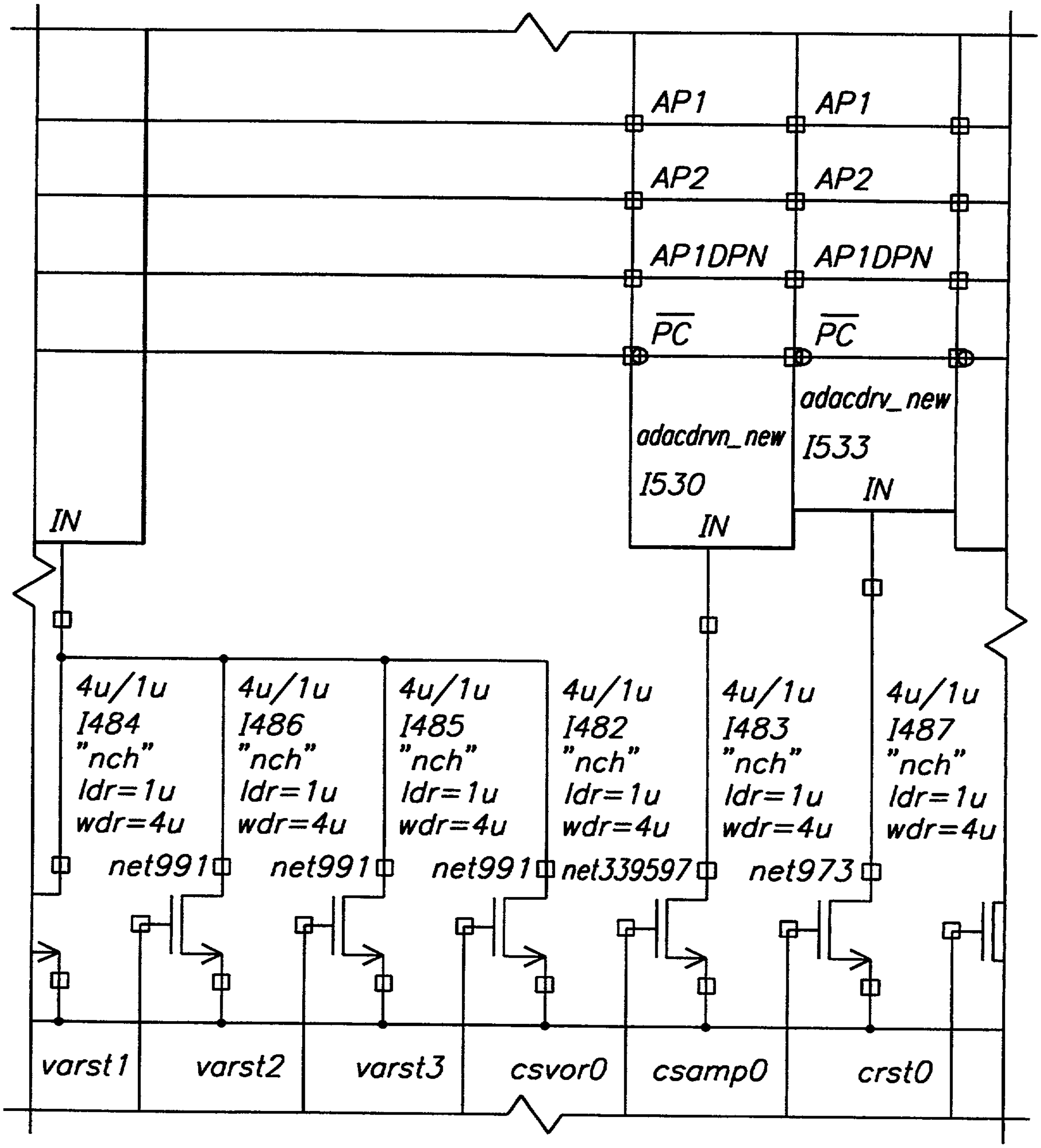

AP1
AP1
AP2
AP2
AP1DPN
AP1DPN
$\overline{PC}$
$\overline{PC}$
adacdrvn_new
I530
IN
adacdrv_new
I533
IN
IN
4u/1u
I484
"nch"
ldr=1u
wdr=4u
4u/1u
I486
"nch"
ldr=1u
wdr=4u
4u/1u
I485
"nch"
ldr=1u
wdr=4u
4u/1u
I482
"nch"
ldr=1u
wdr=4u
4u/1u
I483
"nch"
ldr=1u
wdr=4u
4u/1u
I487
"nch"
ldr=1u
wdr=4u
net991
net991
net991
net339597
net973
varst1
varst2
varst3
csvor0
csamp0
crst0

Fig 9.0103CG

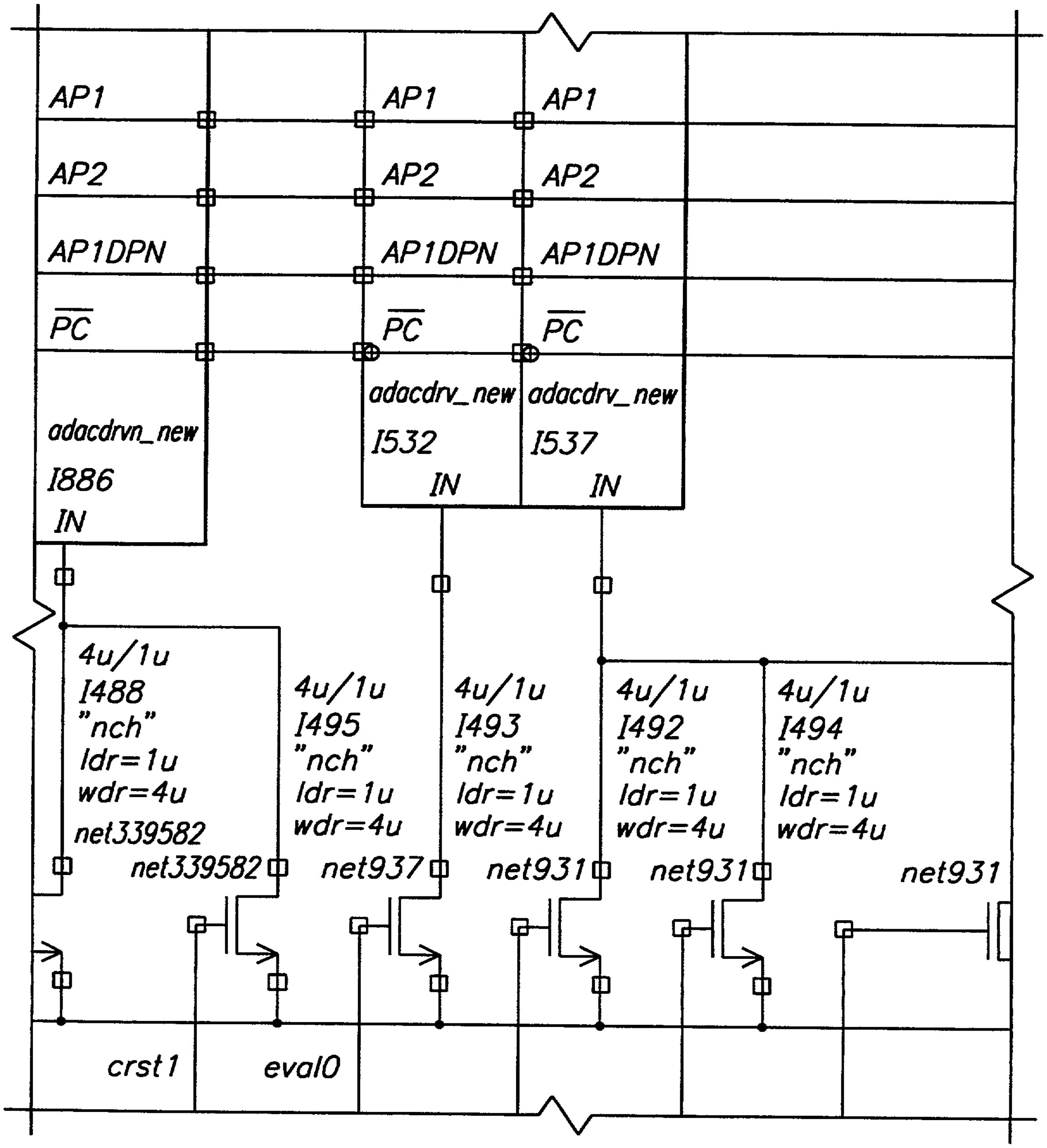

AP1
AP1
AP1
AP2
AP2
AP2
AP1DPN
AP1DPN
AP1DPN
$\overline{PC}$
$\overline{PC}$
$\overline{PC}$
adacdrvn_new
I886
IN
adacdrv_new
I532
IN
adacdrv_new
I537
IN
4u/1u
I488
"nch"
ldr=1u
wdr=4u
net339582
4u/1u
I495
"nch"
ldr=1u
wdr=4u
4u/1u
I493
"nch"
ldr=1u
wdr=4u
4u/1u
I492
"nch"
ldr=1u
wdr=4u
4u/1u
I494
"nch"
ldr=1u
wdr=4u
net339582
net937
net931
net931
net931
crst1
eval0

Fig 9.0103CH

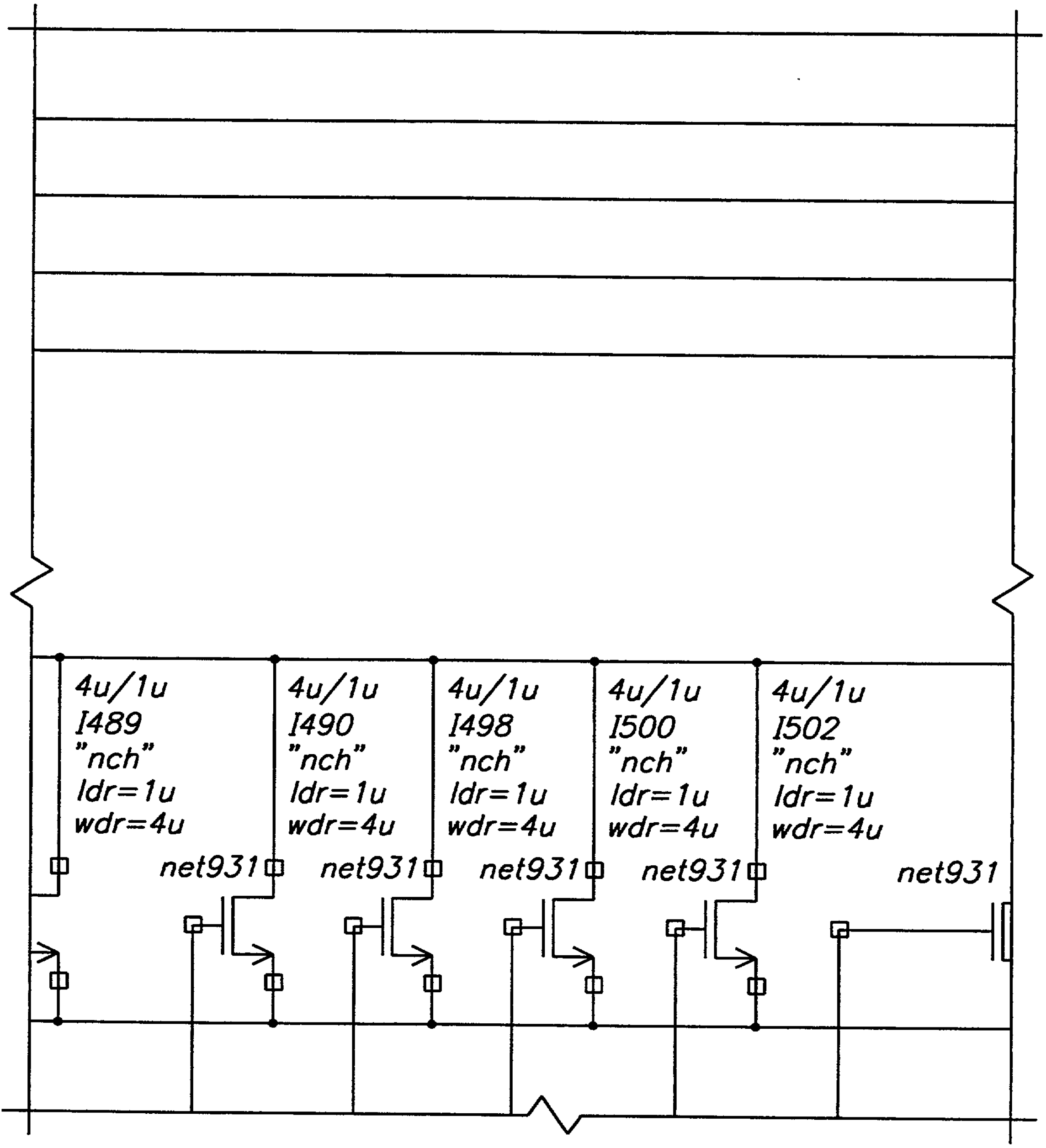

4u/1u
I489
"nch"
ldr=1u
wdr=4u
4u/1u
I490
"nch"
ldr=1u
wdr=4u
4u/1u
I498
"nch"
ldr=1u
wdr=4u
4u/1u
I500
"nch"
ldr=1u
wdr=4u
4u/1u
I502
"nch"
ldr=1u
wdr=4u
net931
net931
net931
net931
net931

Fig 9.0103CI

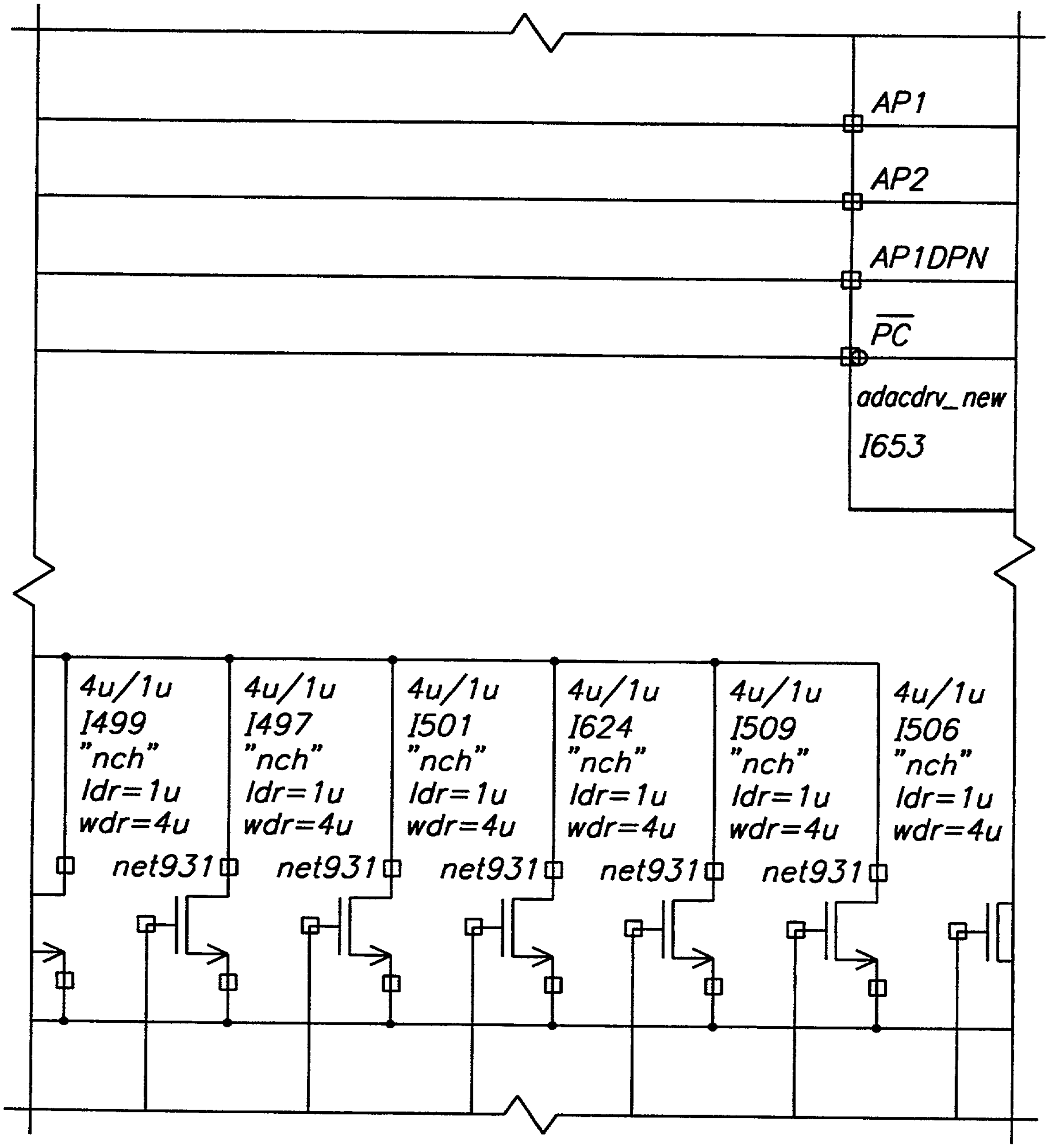

AP1
AP2
AP1DPN
$\overline{PC}$
adacdrv_new
I653
4u/1u
I499
"nch"
ldr=1u
wdr=4u
net931
4u/1u
I497
"nch"
ldr=1u
wdr=4u
net931
4u/1u
I501
"nch"
ldr=1u
wdr=4u
net931
4u/1u
I624
"nch"
ldr=1u
wdr=4u
net931
4u/1u
I509
"nch"
ldr=1u
wdr=4u
net931
4u/1u
I506
"nch"
ldr=1u
wdr=4u

Fig 9.0103C.1

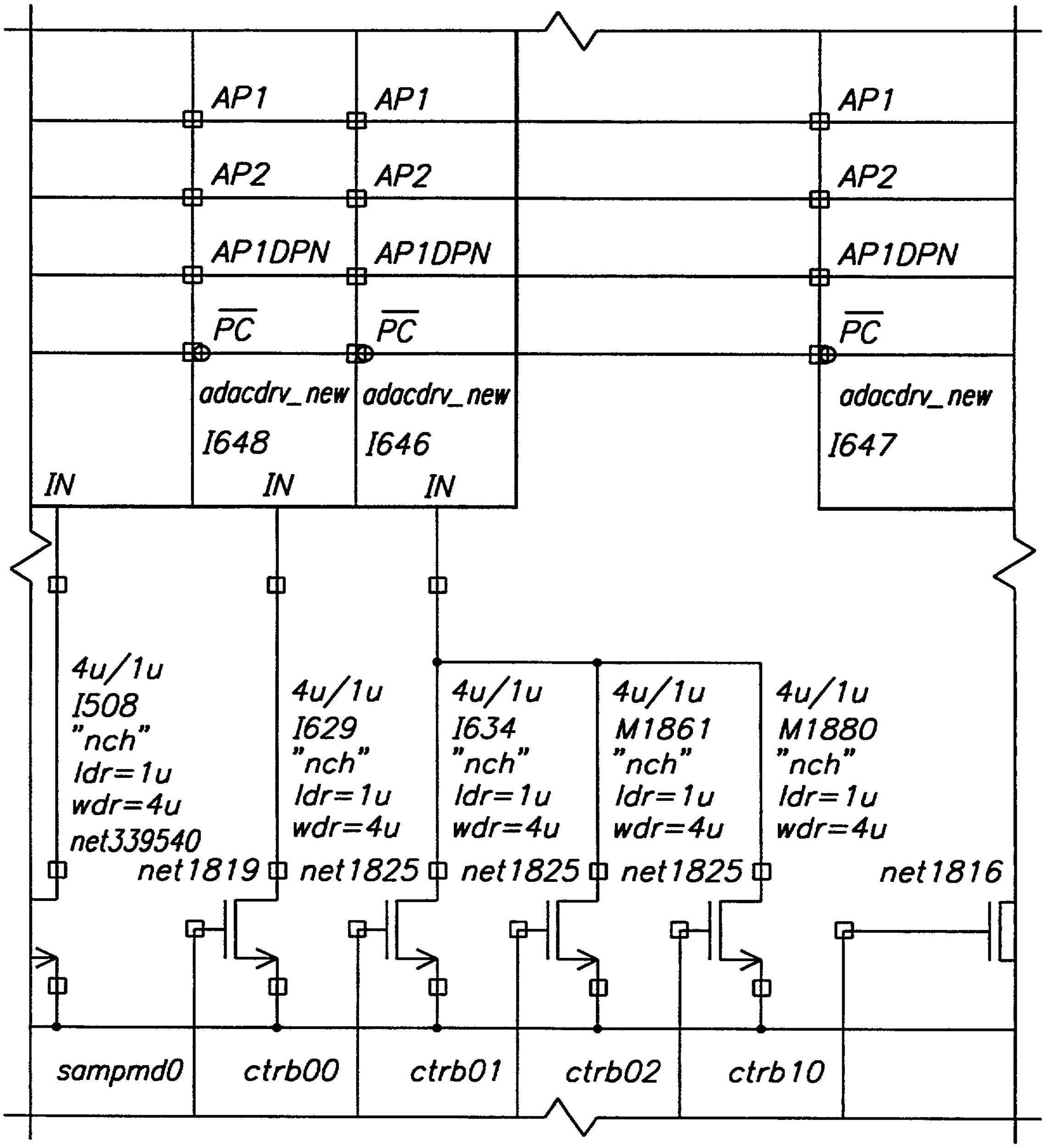

AP1
AP2
AP1DPN
$\overline{PC}$
adacdrv_new
I648
IN
AP1
AP2
AP1DPN
$\overline{PC}$
adacdrv_new
I646
IN
IN
AP1
AP2
AP1DPN
$\overline{PC}$
adacdrv_new
I647
4u/1u
I508
"nch"
ldr=1u
wdr=4u
net339540
4u/1u
I629
"nch"
ldr=1u
wdr=4u
net1819
4u/1u
I634
"nch"
ldr=1u
wdr=4u
net1825
4u/1u
M1861
"nch"
ldr=1u
wdr=4u
net1825
4u/1u
M1880
"nch"
ldr=1u
wdr=4u
net1825
net1816
sampmd0
ctrb00
ctrb01
ctrb02
ctrb10

Fig 9.0103CK

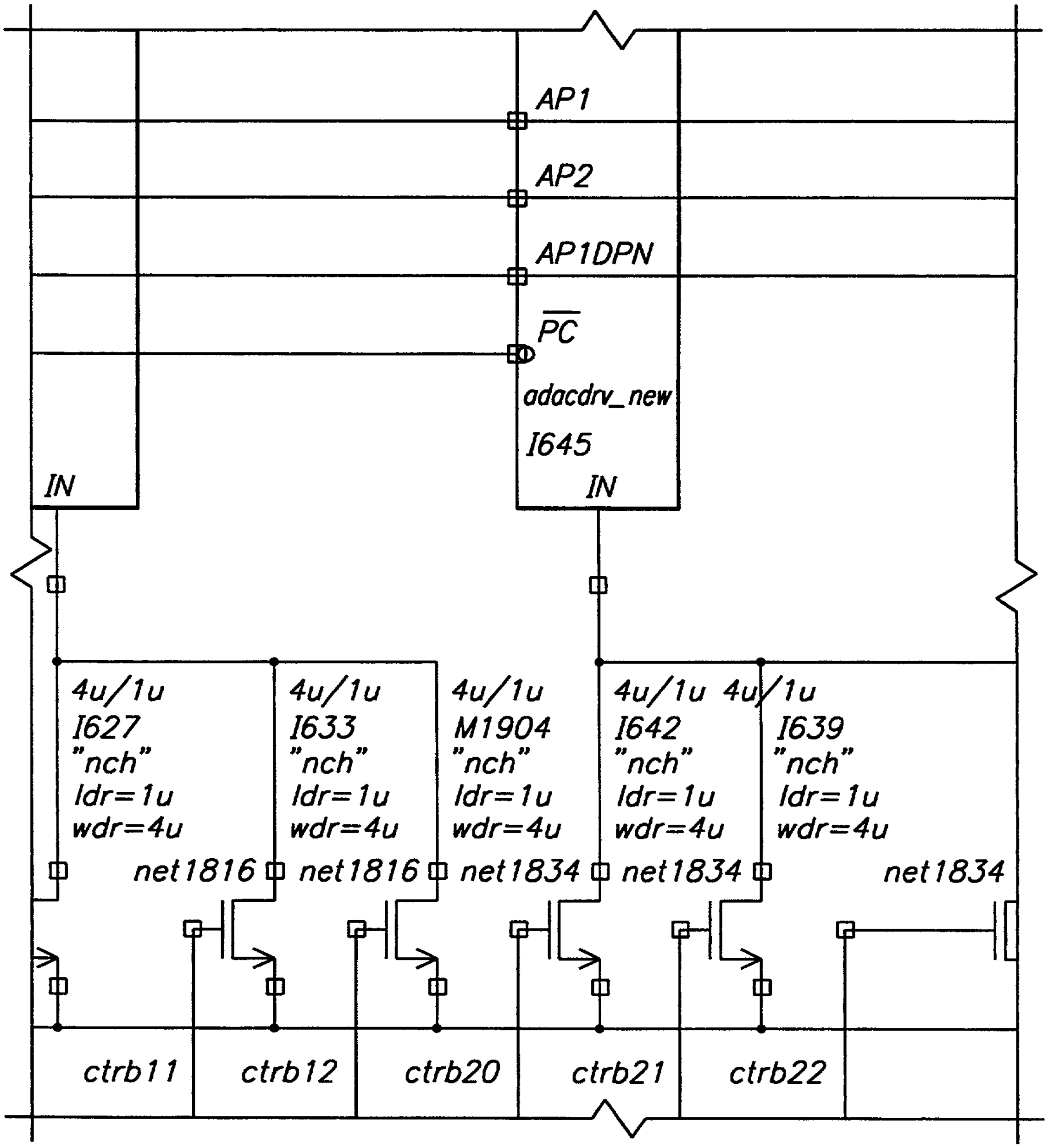

AP1
AP2
AP1DPN
$\overline{PC}$
adacdrv_new
I645
IN
IN
4u/1u
I627
"nch"
ldr=1u
wdr=4u
4u/1u
I633
"nch"
ldr=1u
wdr=4u
4u/1u
M1904
"nch"
ldr=1u
wdr=4u
4u/1u
I642
"nch"
ldr=1u
wdr=4u
4u/1u
I639
"nch"
ldr=1u
wdr=4u
net1816
net1816
net1834
net1834
net1834
ctrb11
ctrb12
ctrb20
ctrb21
ctrb22

Fig 9.0103CL.

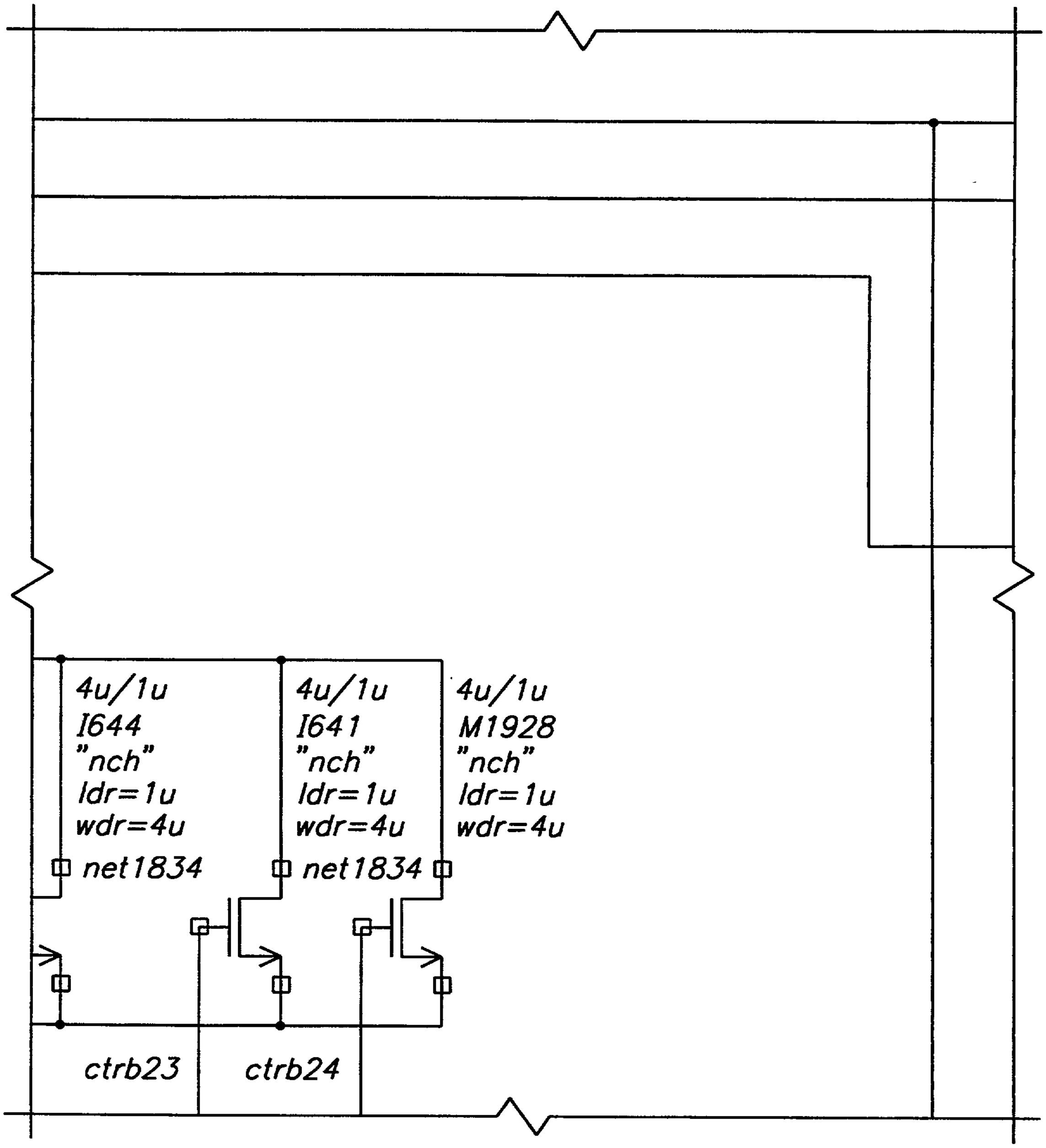

4u/1u
I644
"nch"
ldr=1u
wdr=4u
net1834
4u/1u
I641
"nch"
ldr=1u
wdr=4u
net1834
4u/1u
M1928
"nch"
ldr=1u
wdr=4u
ctrb23
ctrb24

Fig 9.0103CM

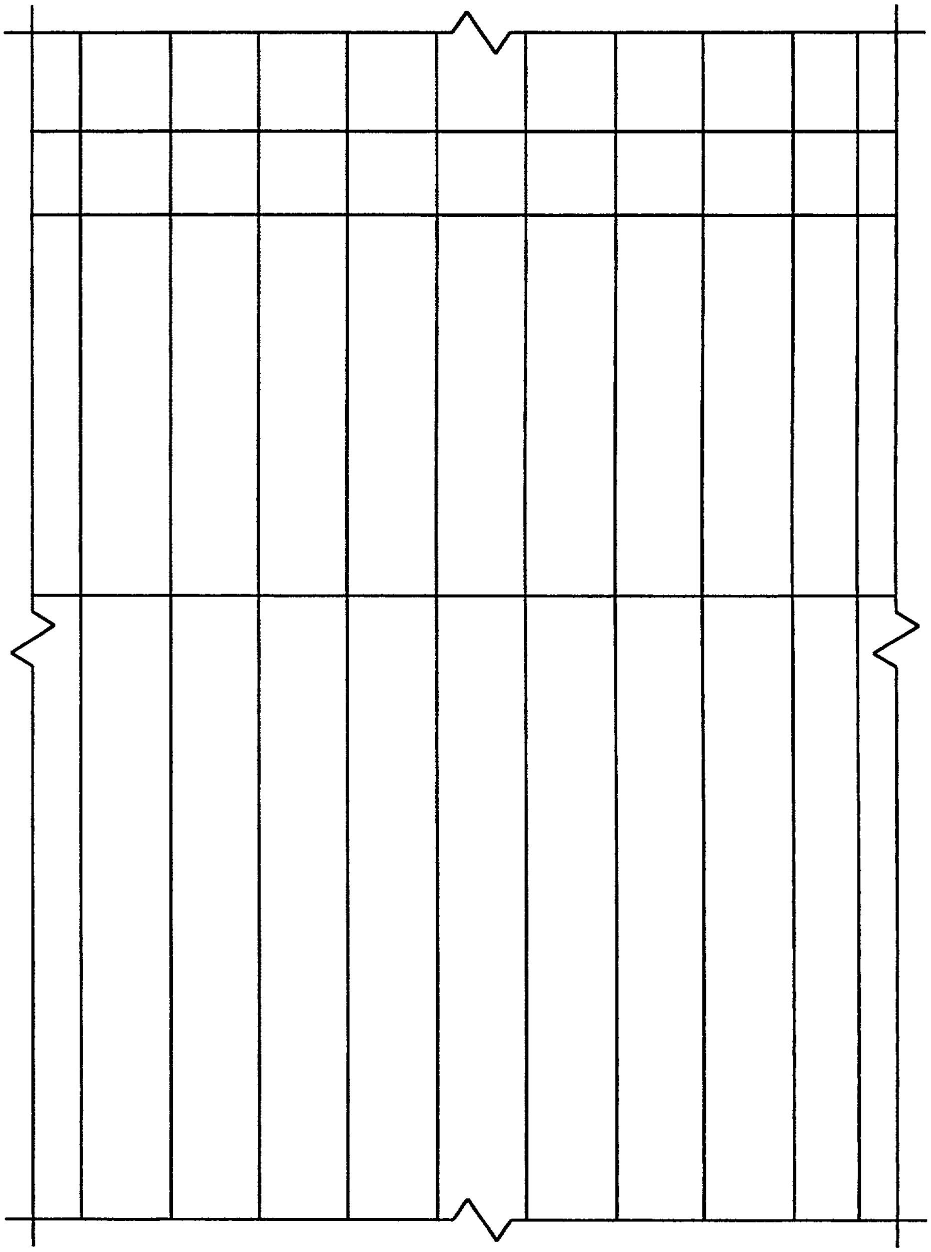


Fig 9.0103CN

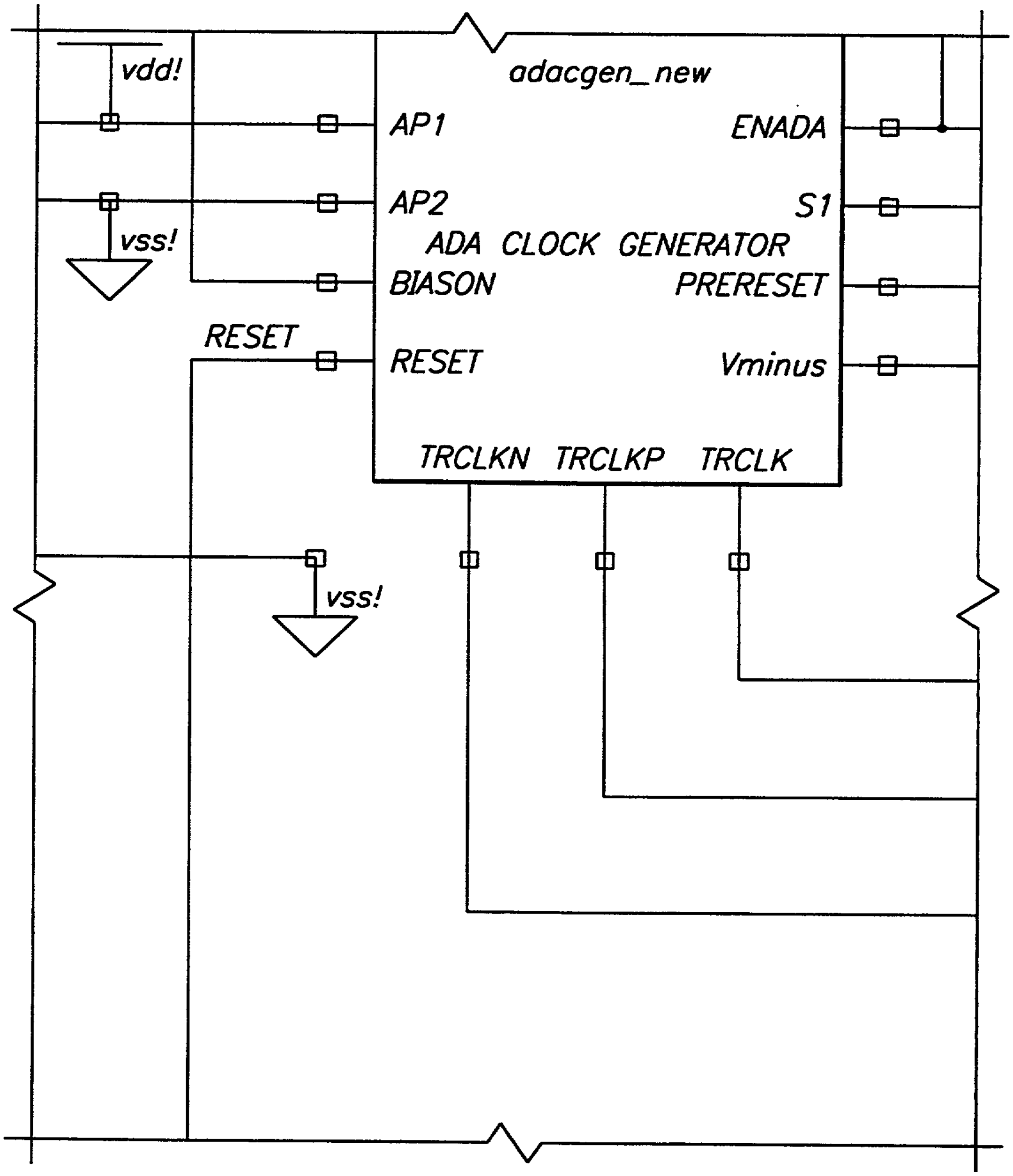

vdd!
adacgen_new
AP1
ENADA
AP2
S1
vss!
ADA CLOCK GENERATOR
BIASON
PRERESET
RESET
RESET
Vminus
TRCLKN
TRCLKP
TRCLK
vss!

Fig 9.0103C0

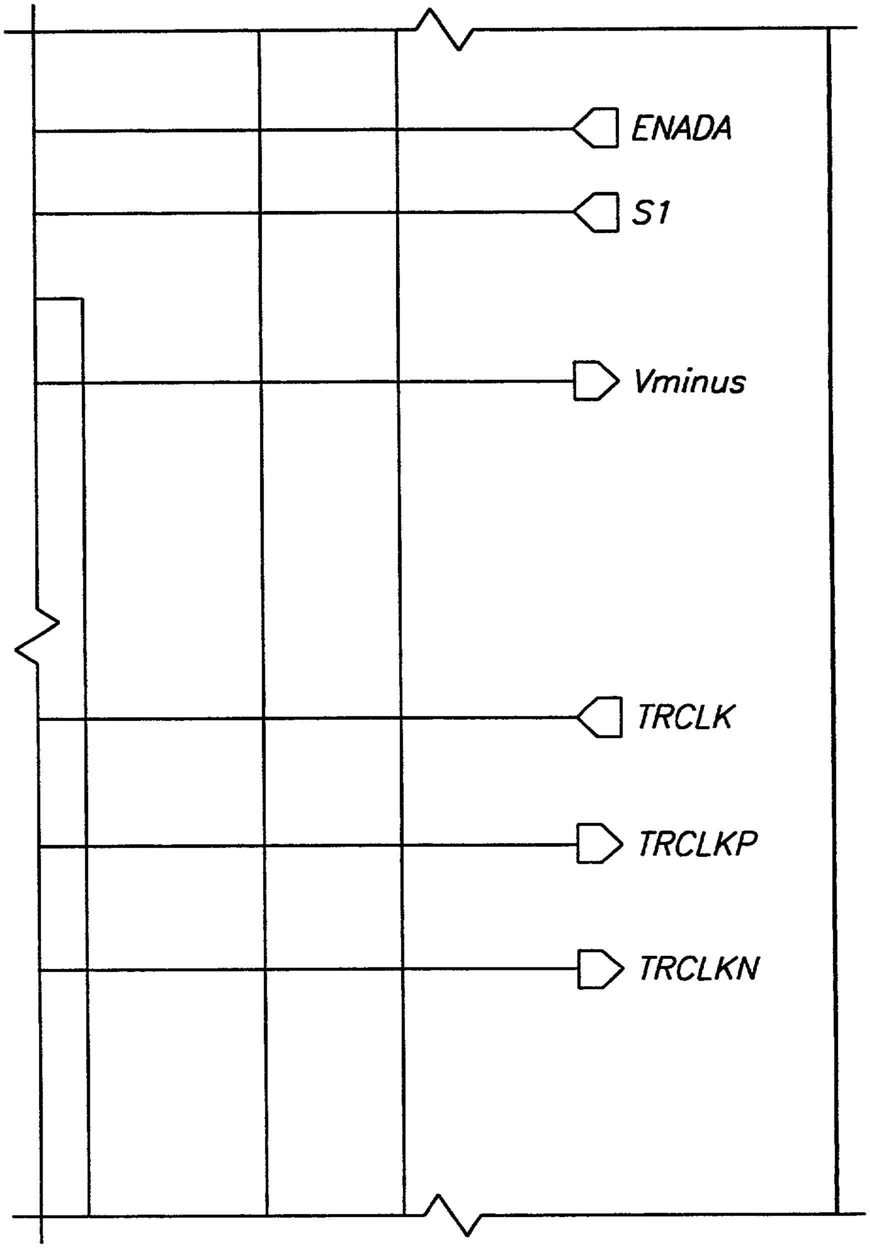


Fig 9.0103CP

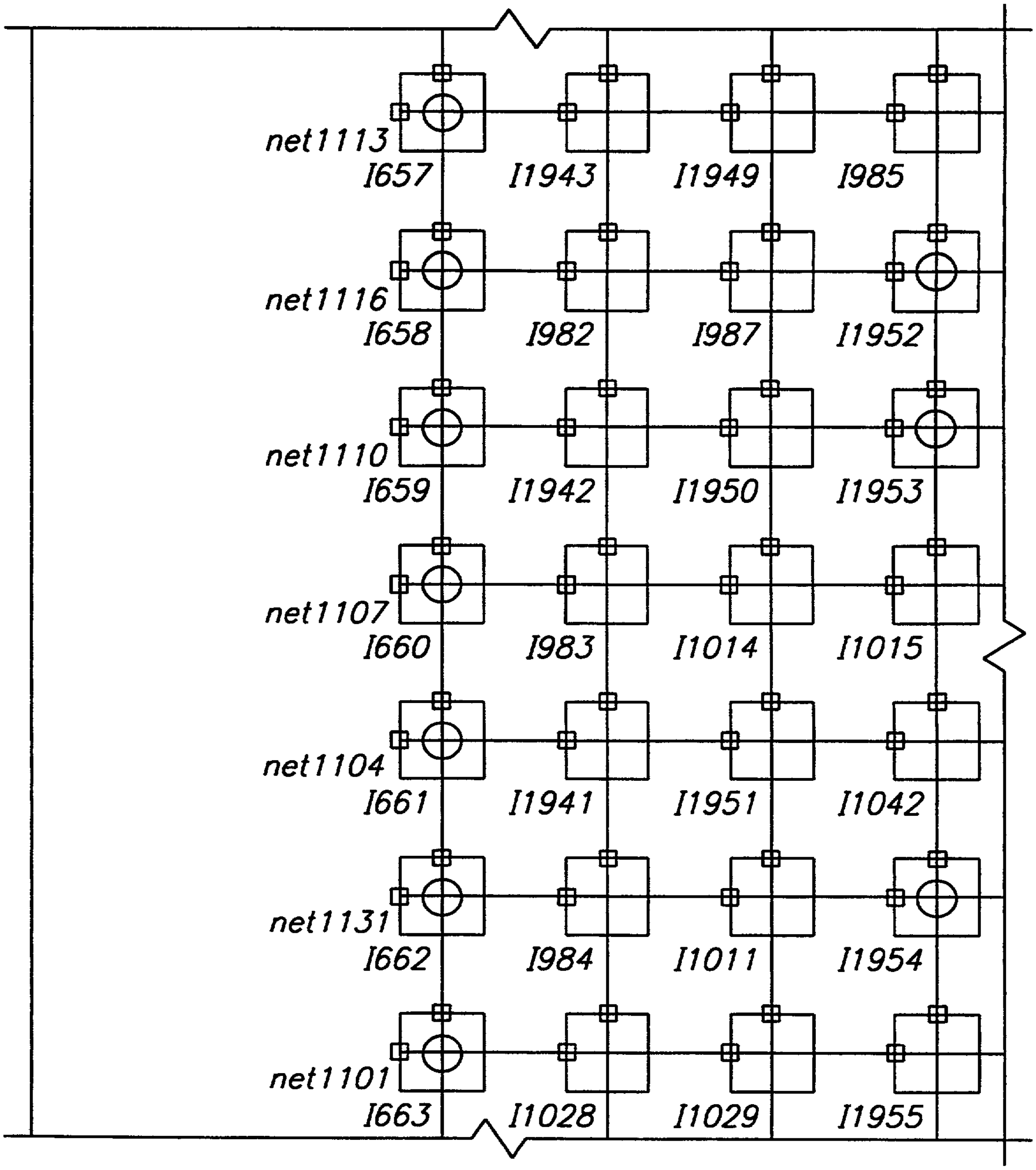

net1113
I657
I1943
I1949
I985
net1116
I658
I982
I987
I1952
net1110
I659
I1942
I1950
I1953
net1107
I660
I983
I1014
I1015
net1104
I661
I1941
I1951
I1042
net1131
I662
I984
I1011
I1954
net1101
I663
I1028
I1029
I1955

Fig 9.0103DA

2322/3273

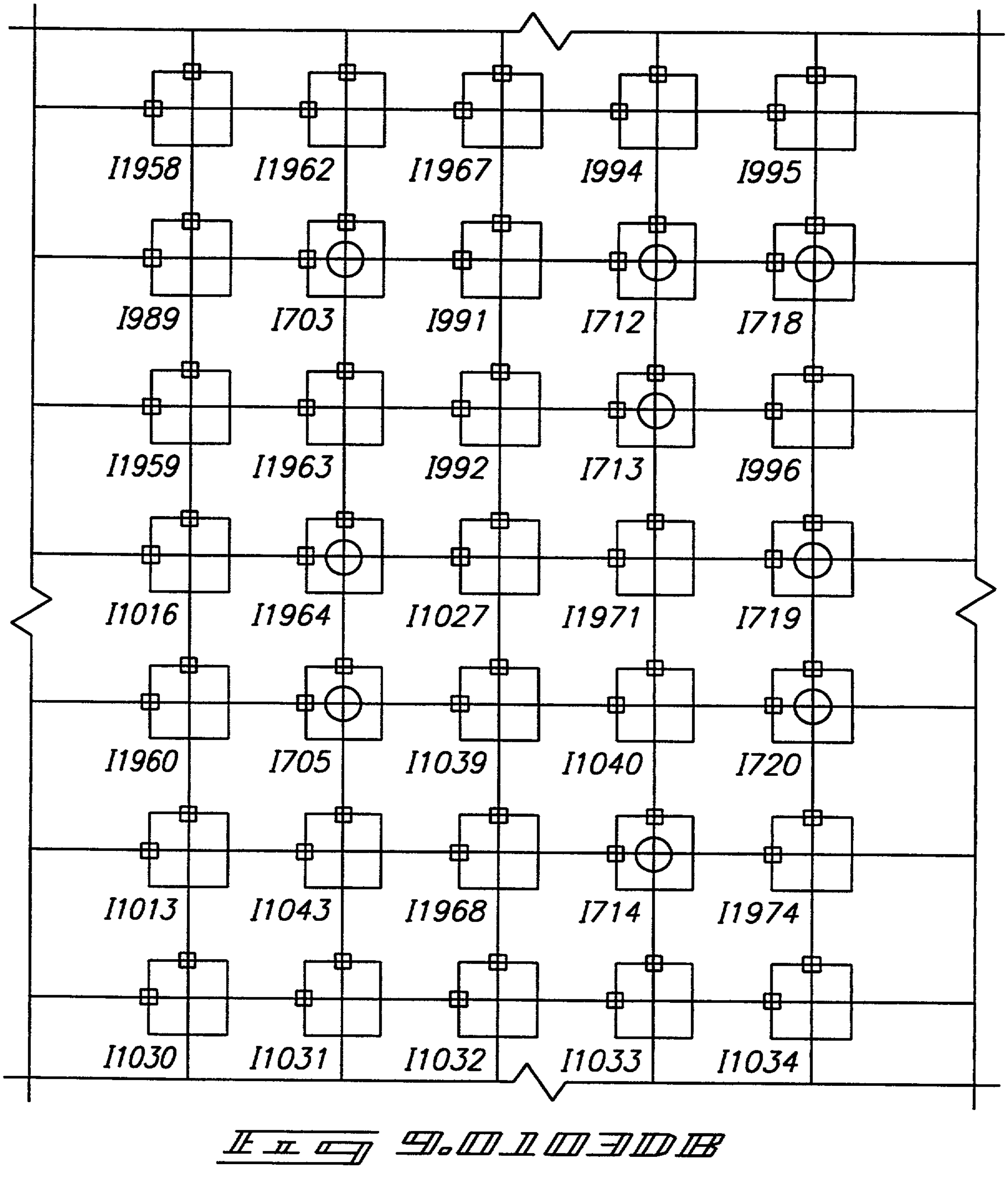


Fig 9.0103DB

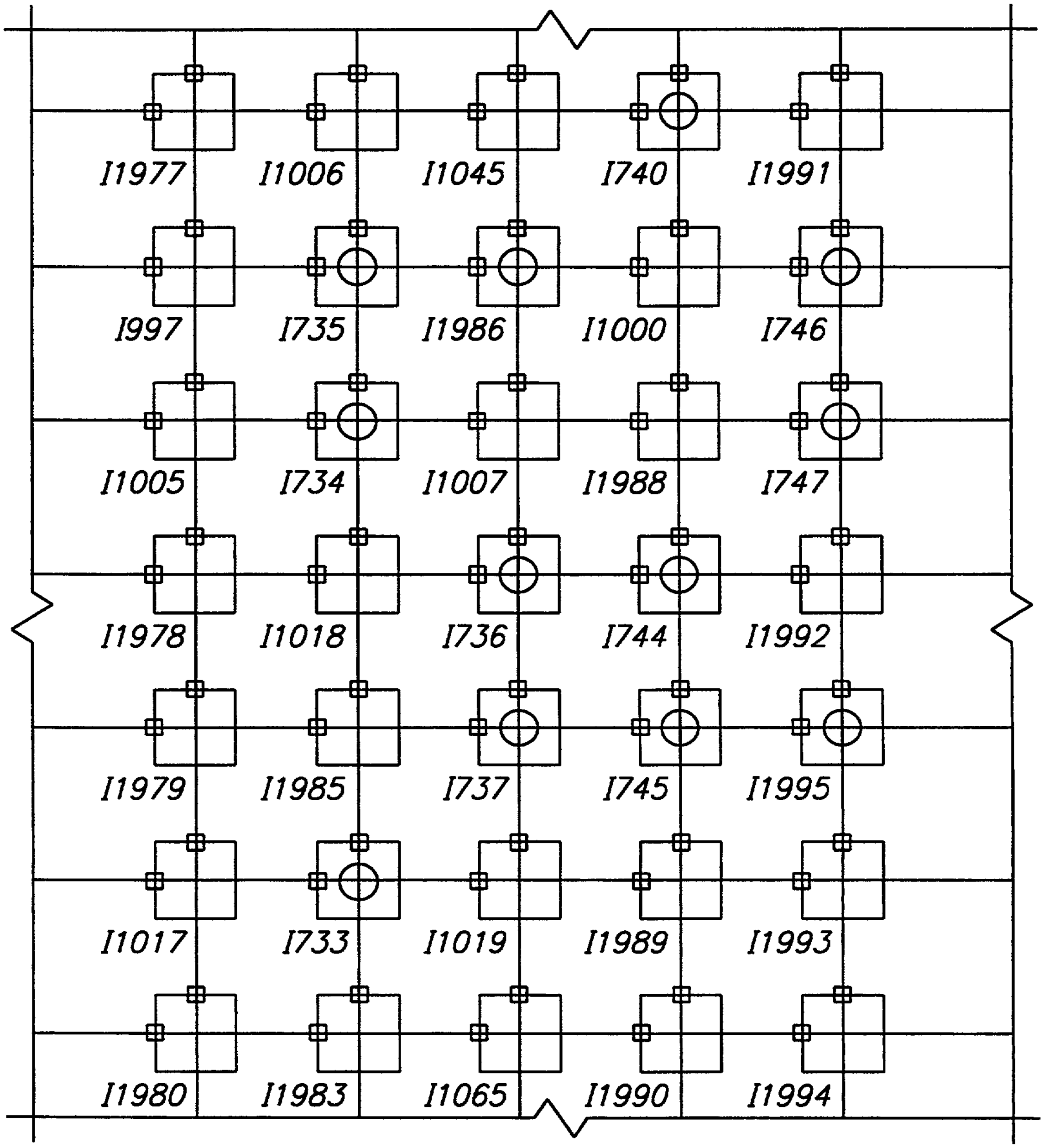
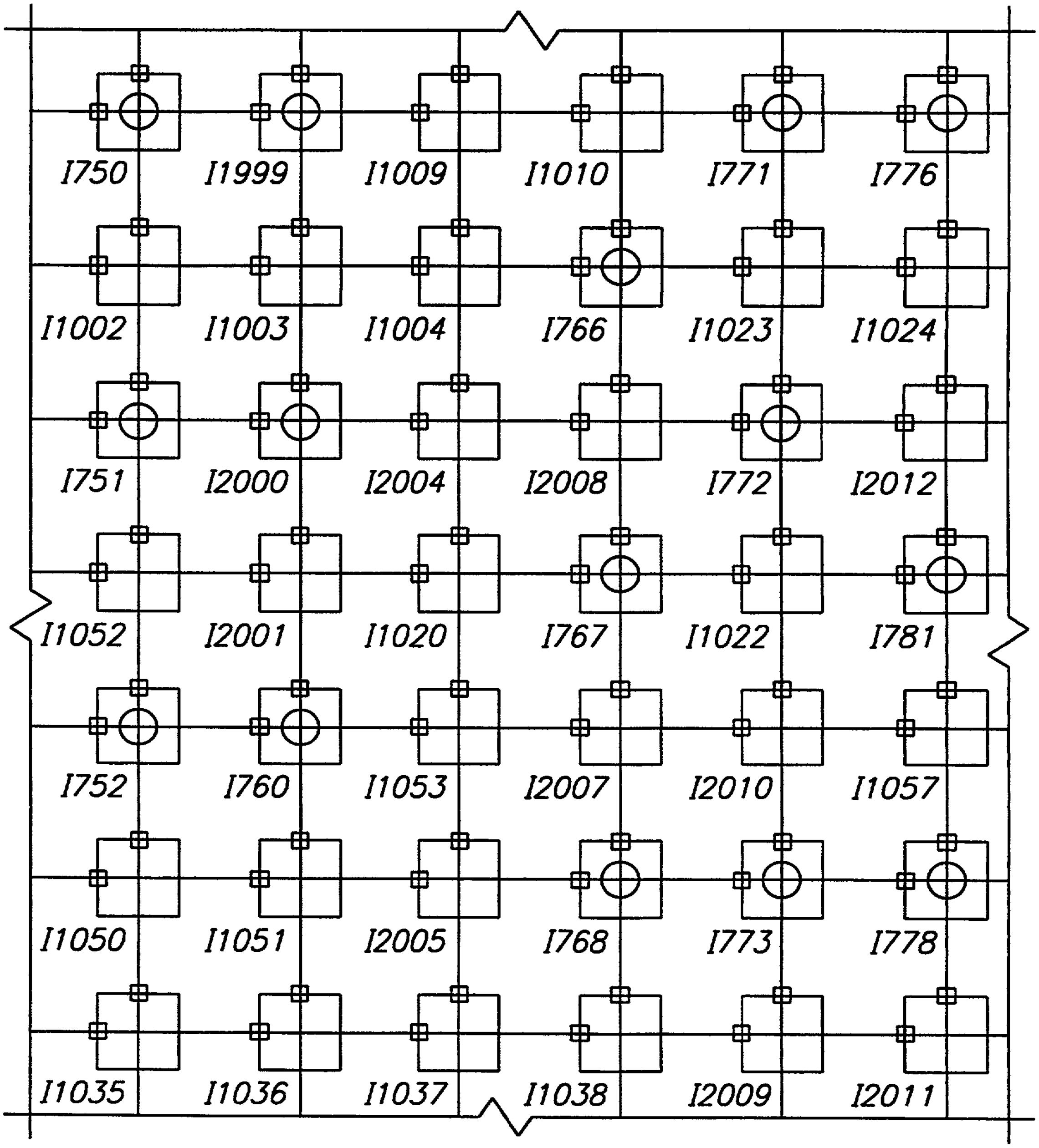

I1977
I1006
I1045
I740
I1991
I997
I735
I1986
I1000
I746
I1005
I734
I1007
I1988
I747
I1978
I1018
I736
I744
I1992
I1979
I1985
I737
I745
I1995
I1017
I733
I1019
I1989
I1993
I1980
I1983
I1065
I1990
I1994

Fig 9.0103DC



I750
I1999
I1009
I1010
I771
I776
I1002
I1003
I1004
I766
I1023
I1024
I751
I2000
I2004
I2008
I772
I2012
I1052
I2001
I1020
I767
I1022
I781
I752
I760
I1053
I2007
I2010
I1057
I1050
I1051
I2005
I768
I773
I778
I1035
I1036
I1037
I1038
I2009
I2011

Fig 9.0103DD

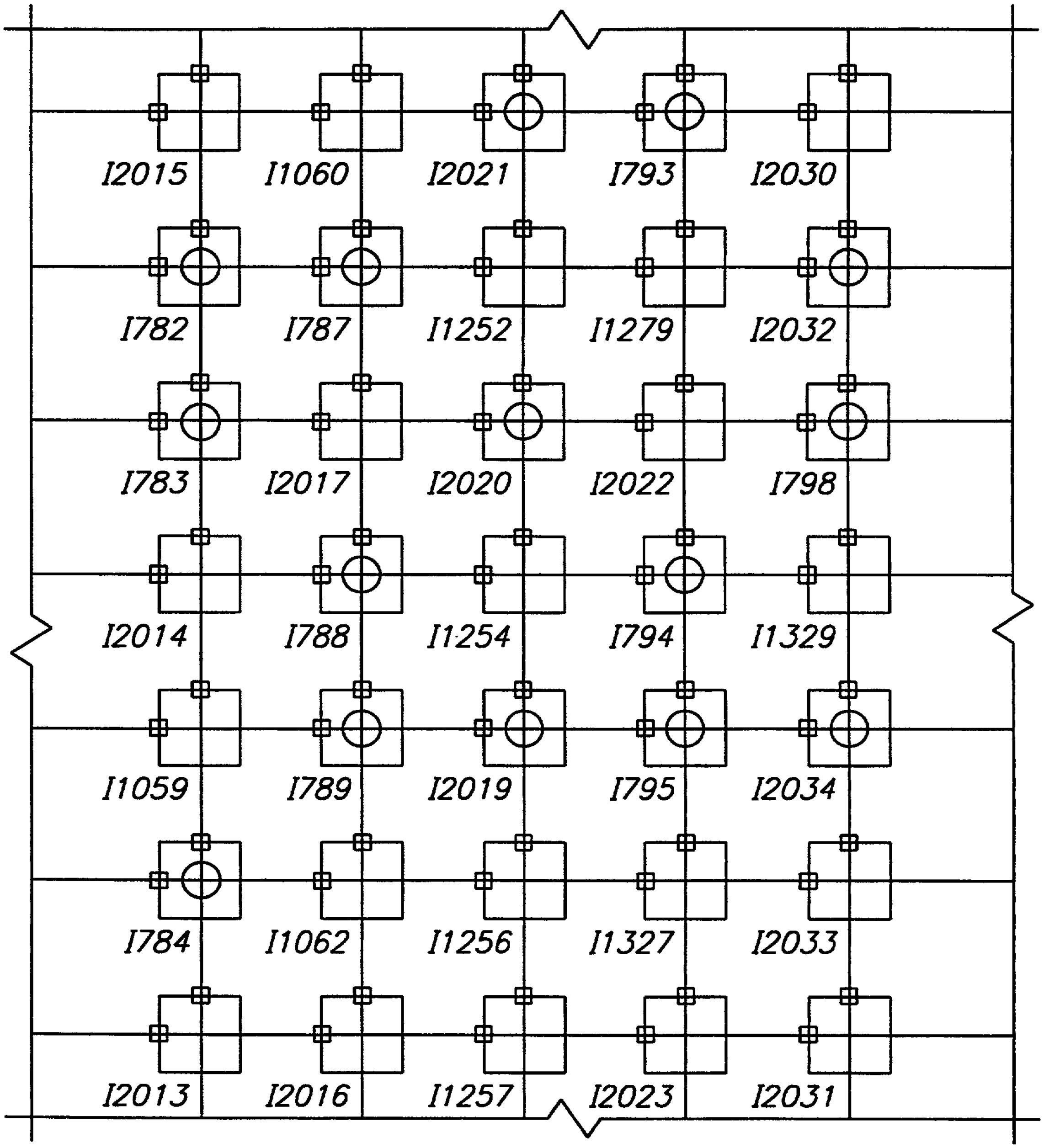
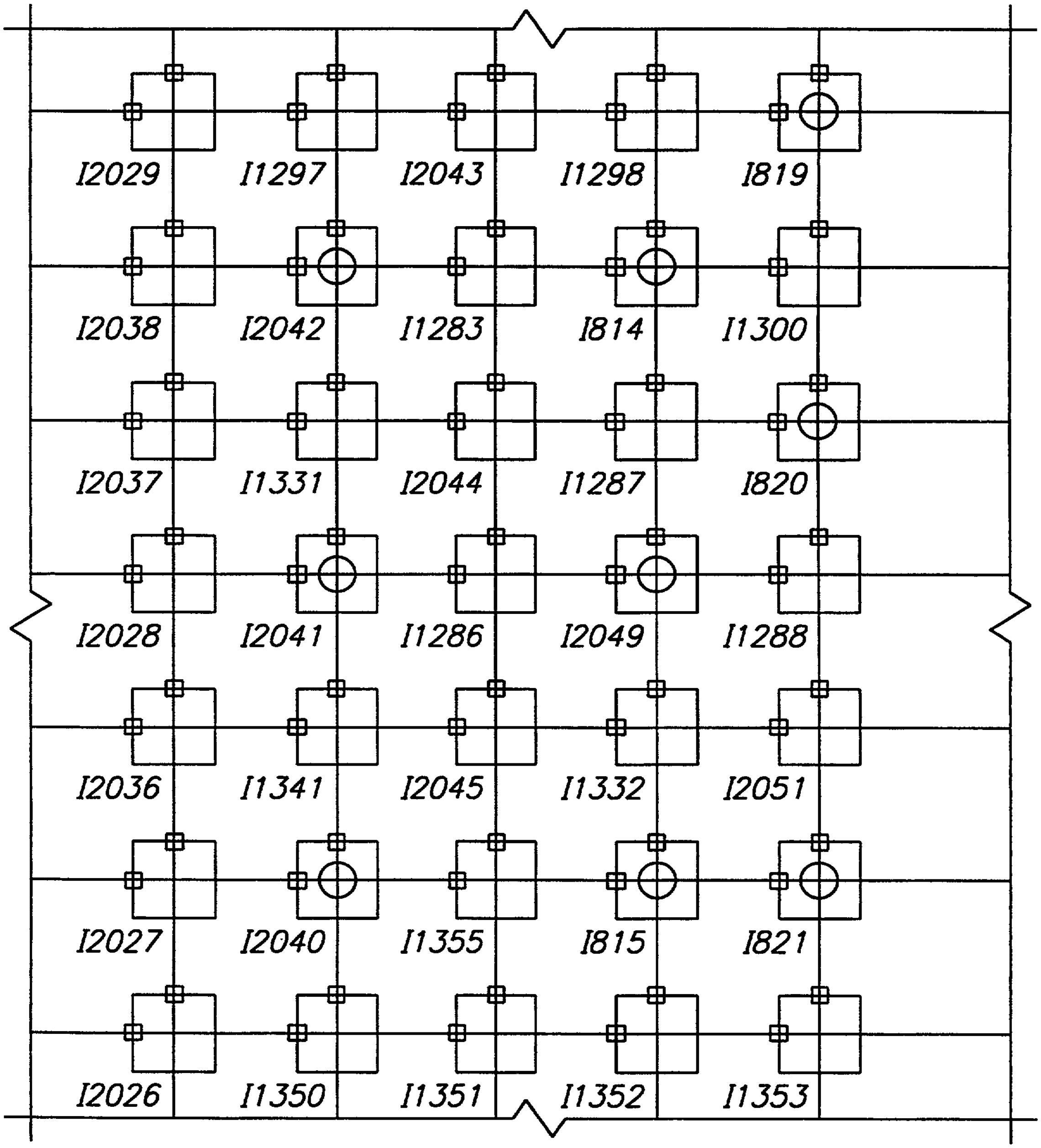

I2015
I1060
I2021
I793
I2030
I782
I787
I1252
I1279
I2032
I783
I2017
I2020
I2022
I798
I2014
I788
I1254
I794
I1329
I1059
I789
I2019
I795
I2034
I784
I1062
I1256
I1327
I2033
I2013
I2016
I1257
I2023
I2031

Fig 9.0103DE


I2029
I1297
I2043
I1298
I819
I2038
I2042
I1283
I814
I1300
I2037
I1331
I2044
I1287
I820
I2028
I2041
I1286
I2049
I1288
I2036
I1341
I2045
I1332
I2051
I2027
I2040
I1355
I815
I821
I2026
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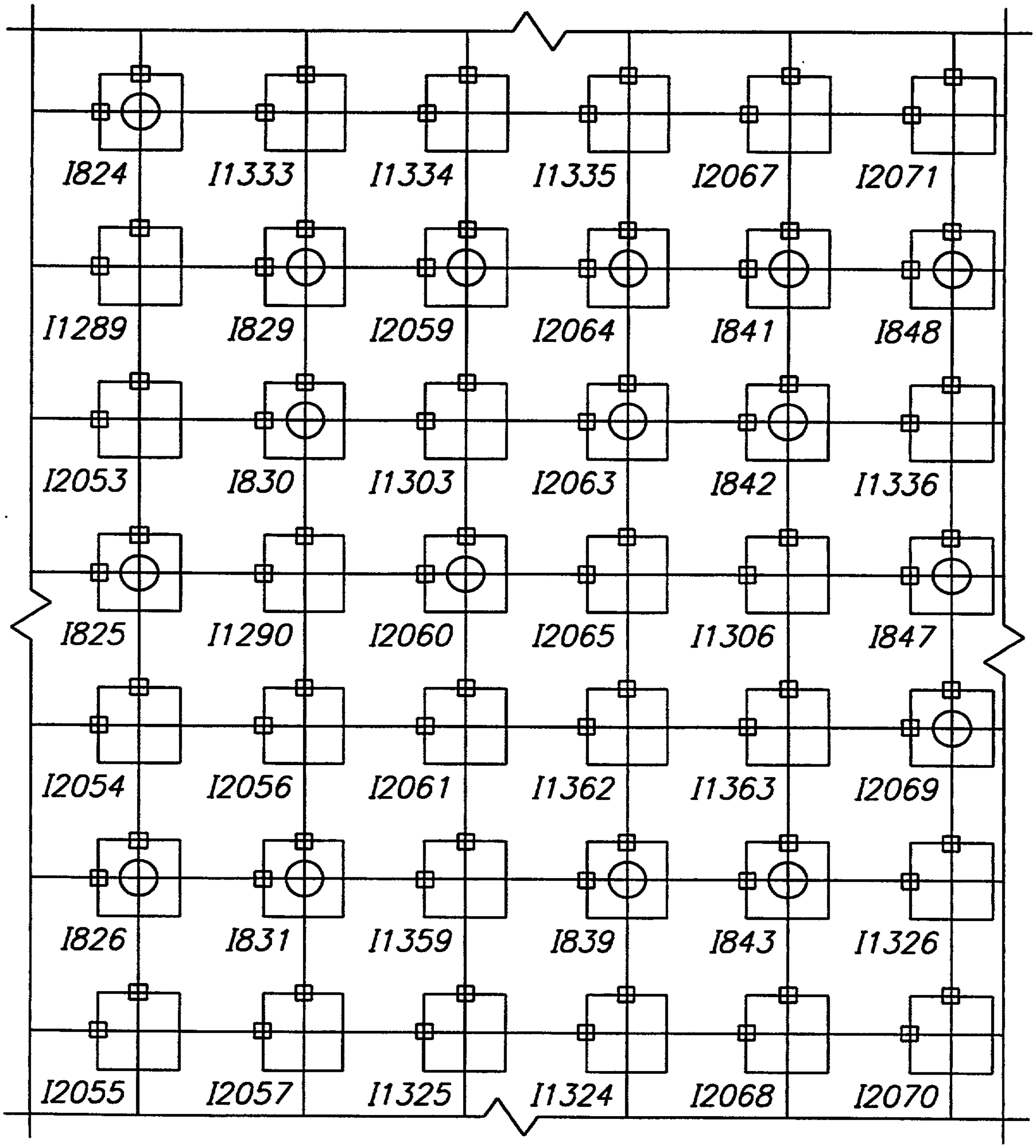
I1351
I1352
I1353

Fig 9.0103DF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I1335
I2067
I2071
I1289
I829
I2059
I2064
I841
I848
I2053
I830
I1303
I2063
I842
I1336
I825
I1290
I2060
I2065
I1306
I847
I2054
I2056
I2061
I1362
I1363
I2069
I826
I831
I1359
I839
I843
I1326
I2055
I2057
I1325
I1324
I2068
I2070

Fig 9.0103DG

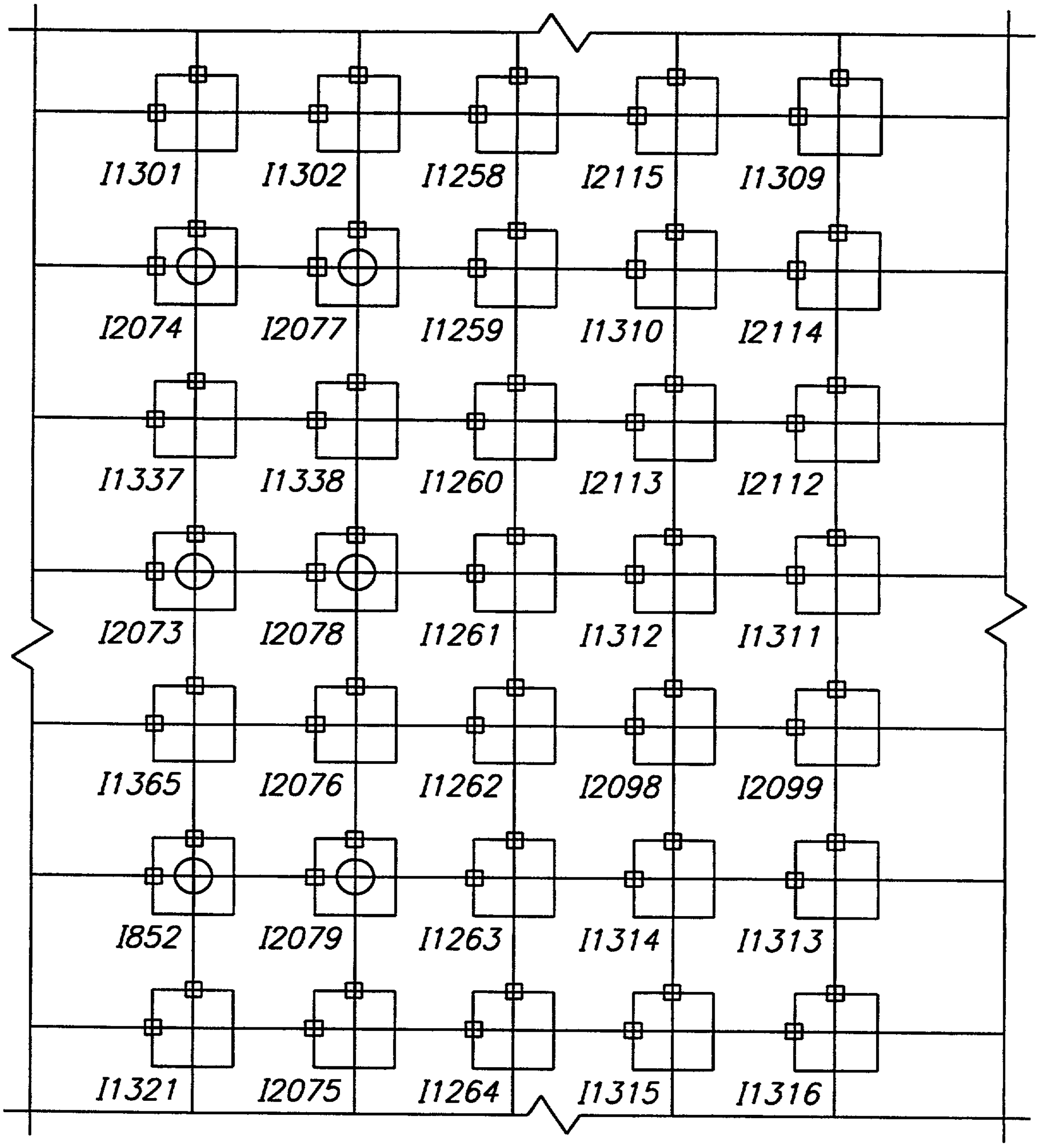
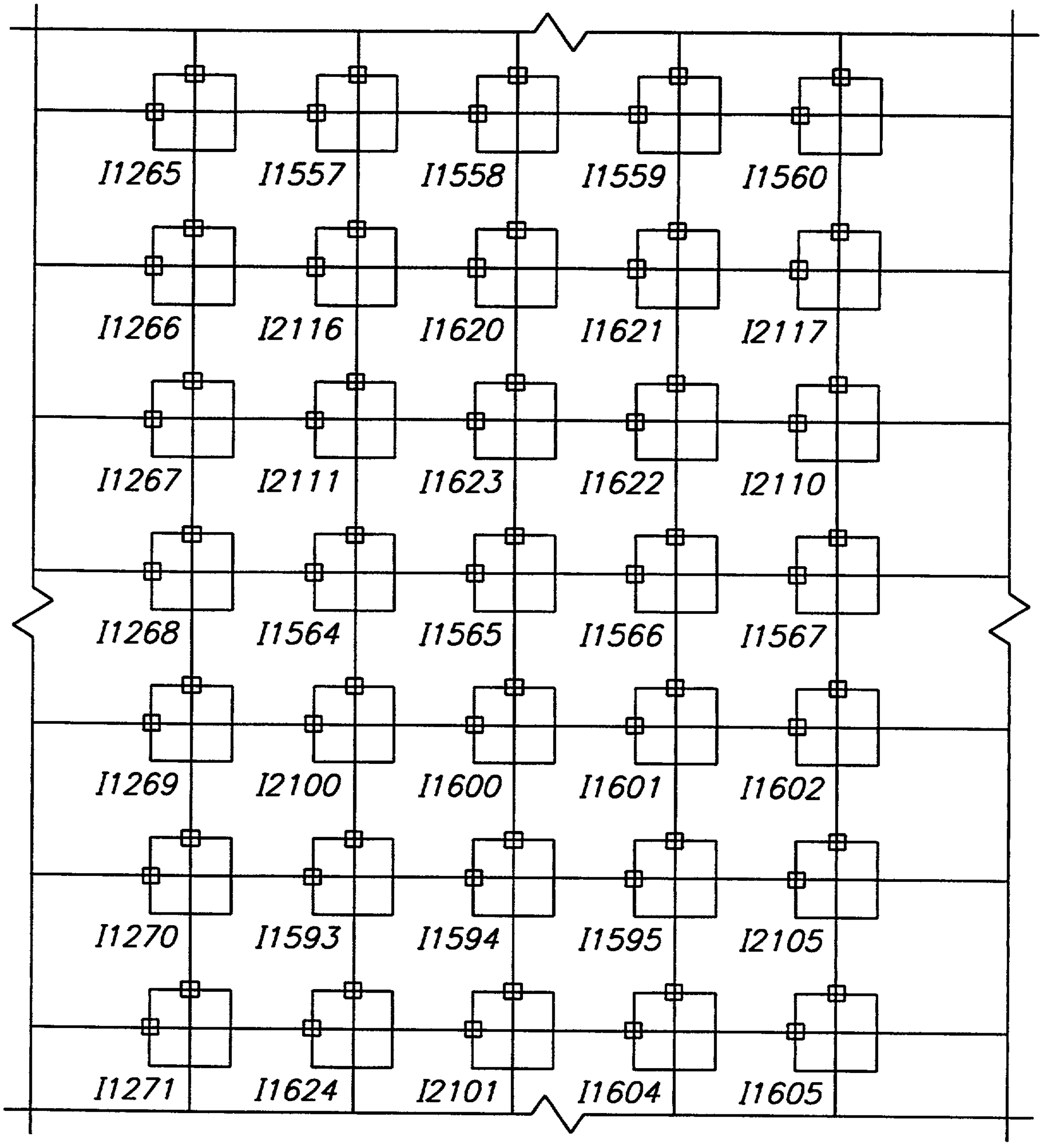

I1301
I1302
I1258
I2115
I1309
I2074
I2077
I1259
I1310
I2114
I1337
I1338
I1260
I2113
I2112
I2073
I2078
I1261
I1312
I1311
I1365
I2076
I1262
I2098
I2099
I852
I2079
I1263
I1314
I1313
I1321
I2075
I1264
I1315
I1316

Fig 9.01030H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I1558
I1559
I1560
I1266
I2116
I1620
I1621
I2117
I1267
I2111
I1623
I1622
I2110
I1268
I1564
I1565
I1566
I1567
I1269
I2100
I1600
I1601
I1602
I1270
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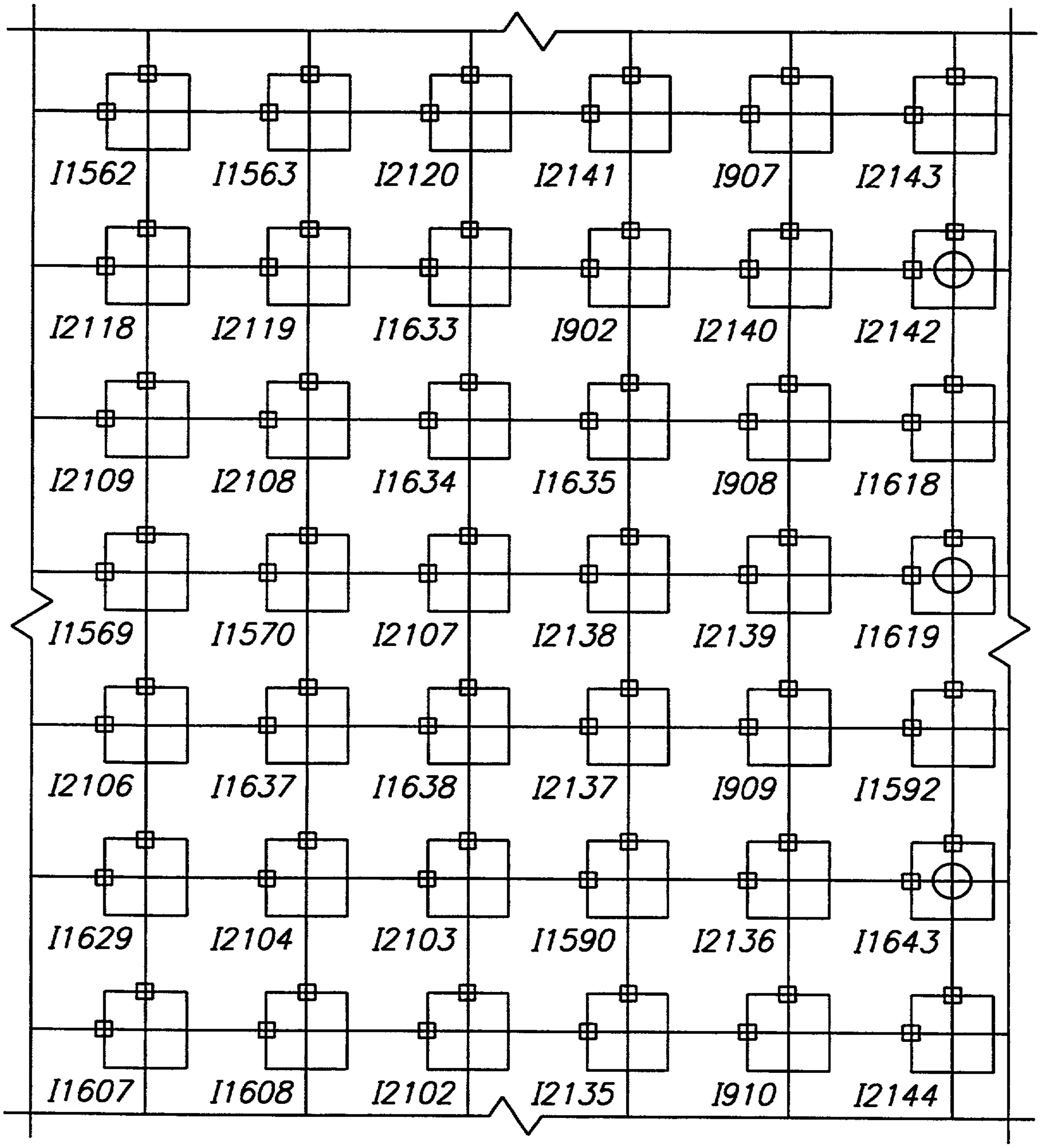
I1594
I1595
I2105
I1271
I1624
I2101
I1604
I1605

Fig 9.0103DI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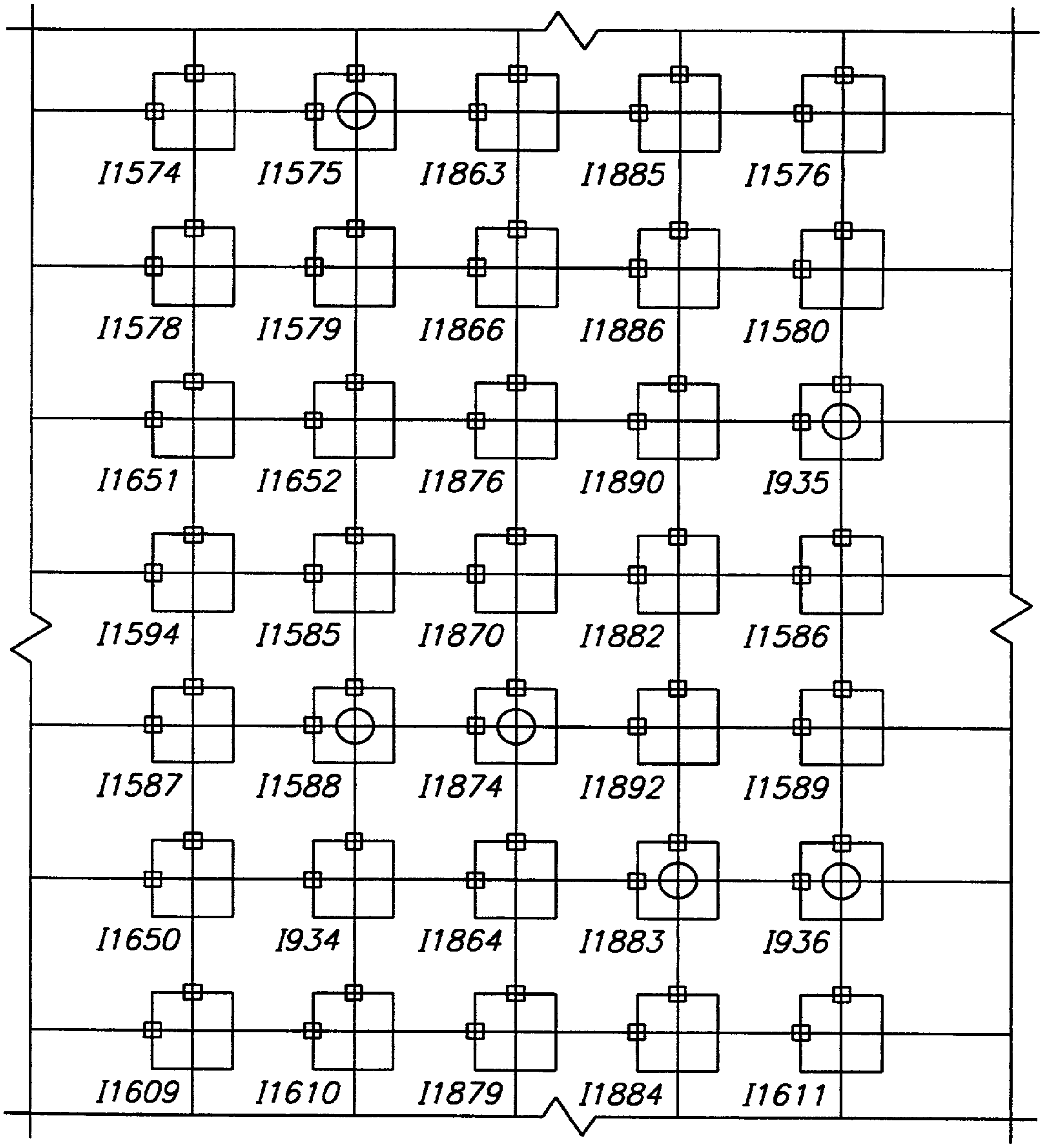
I1563
I2120
I2141
I907
I2143
I2118
I2119
I1633
I902
I2140
I2142
I2109
I2108
I1634
I1635
I908
I1618
I1569
I1570
I2107
I2138
I2139
I1619
I2106
I1637
I1638
I2137
I909
I1592
I1629
I2104
I2103
I1590
I2136
I1643
I1607
I1608
I2102
I2135
I910
I2144

Fig 9.01.03D.1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I1576
I1578
I1579
I1866
I1886
I1580
I1651
I1652
I1876
I1890
I935
I1594
I1585
I1870
I1882
I1586
I1587
I1588
I1874
I1892
I1589
I1650
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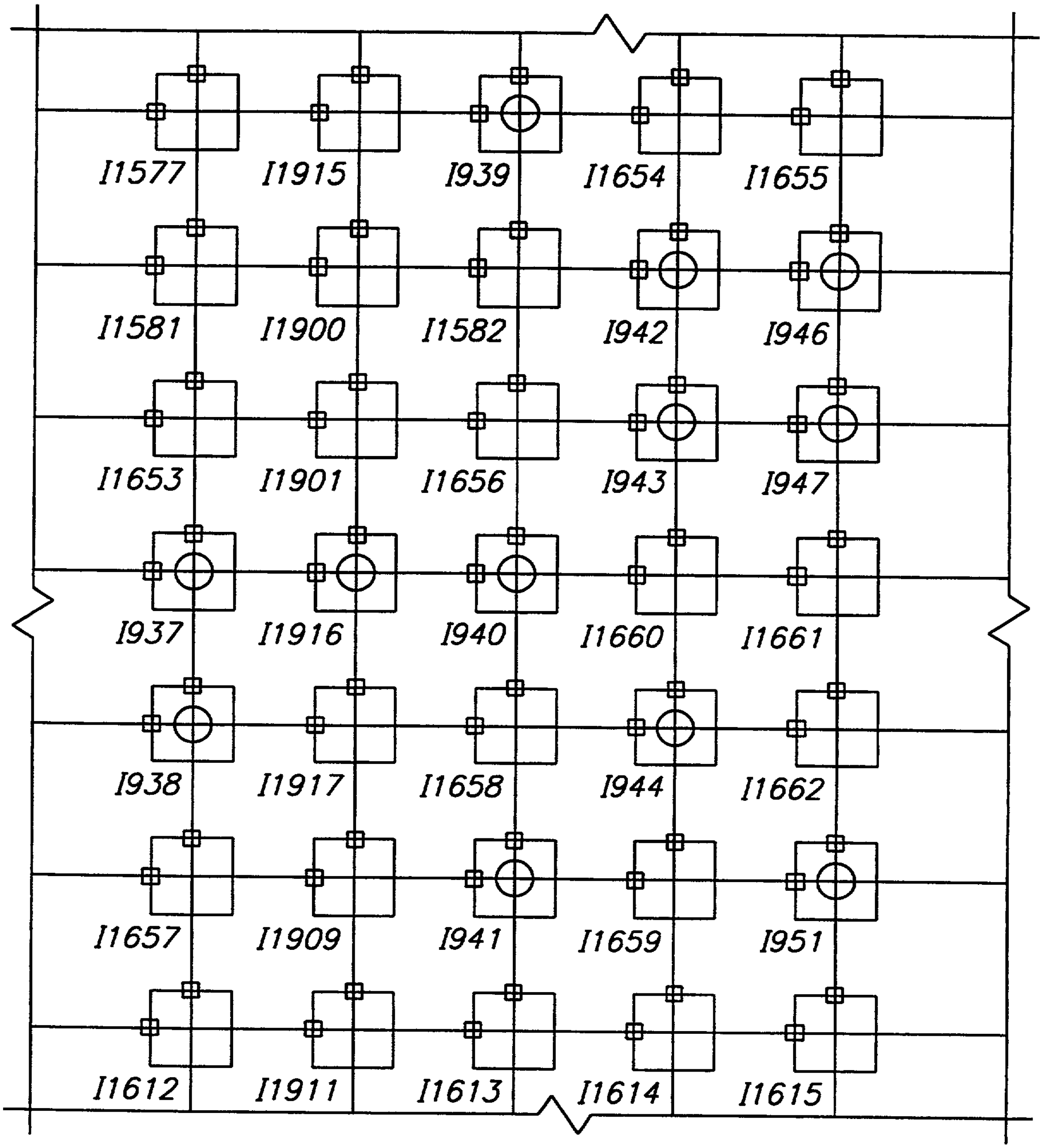
I1864
I1883
I936
I1609
I1610
I1879
I1884
I1611

Fig 9.0103DK


I1577
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I1581
I1900
I1582
I942
I946
I1653
I1901
I1656
I943
I947
I937
I1916
I940
I1660
I1661
I938
I1917
I1658
I944
I1662
I1657
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I941
I1659
I951
I1612
I1911
I1613
I1614
I1615

Fig 9.0103DL

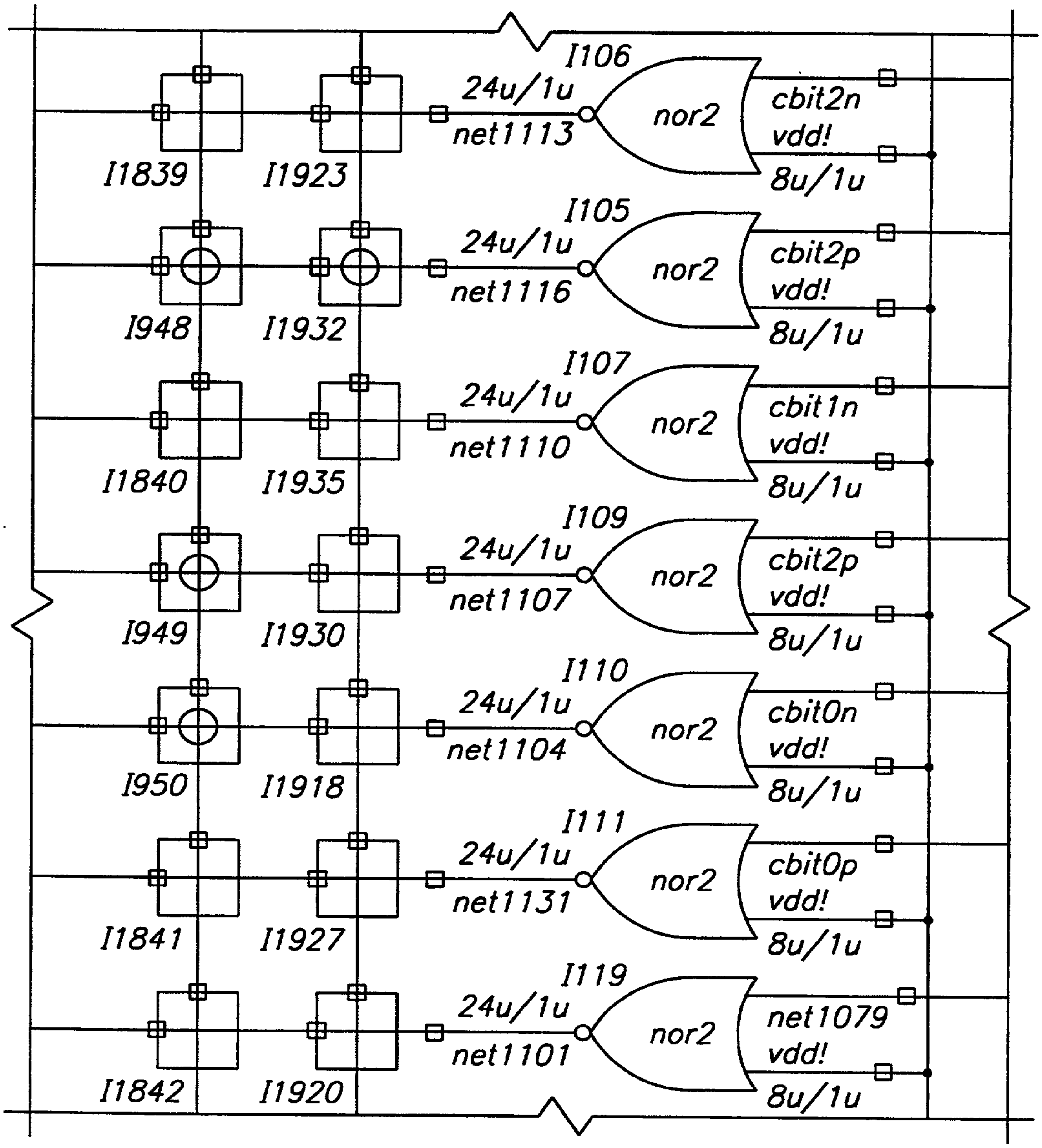


Fig 9.01103DM

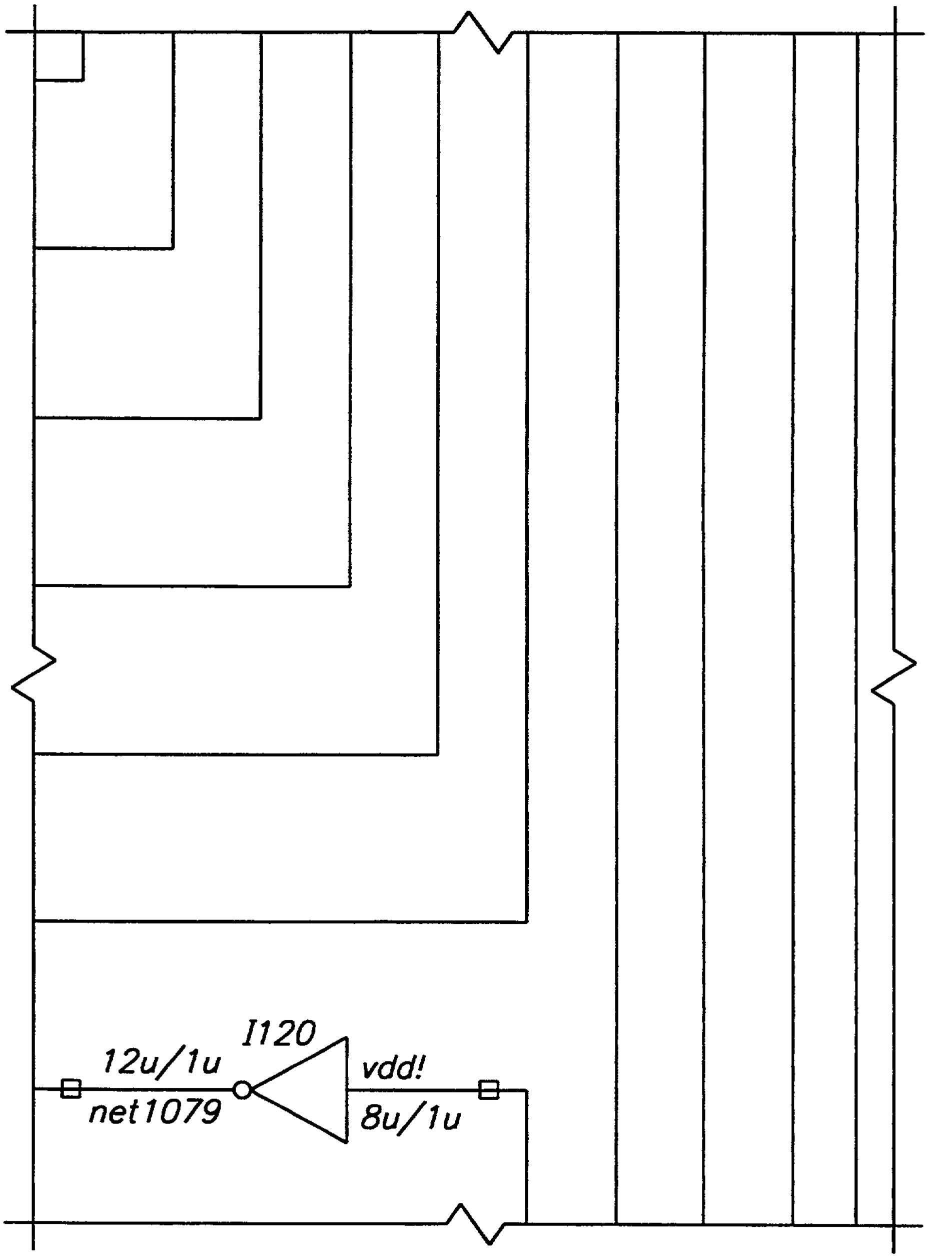


Fig 9.0103DN

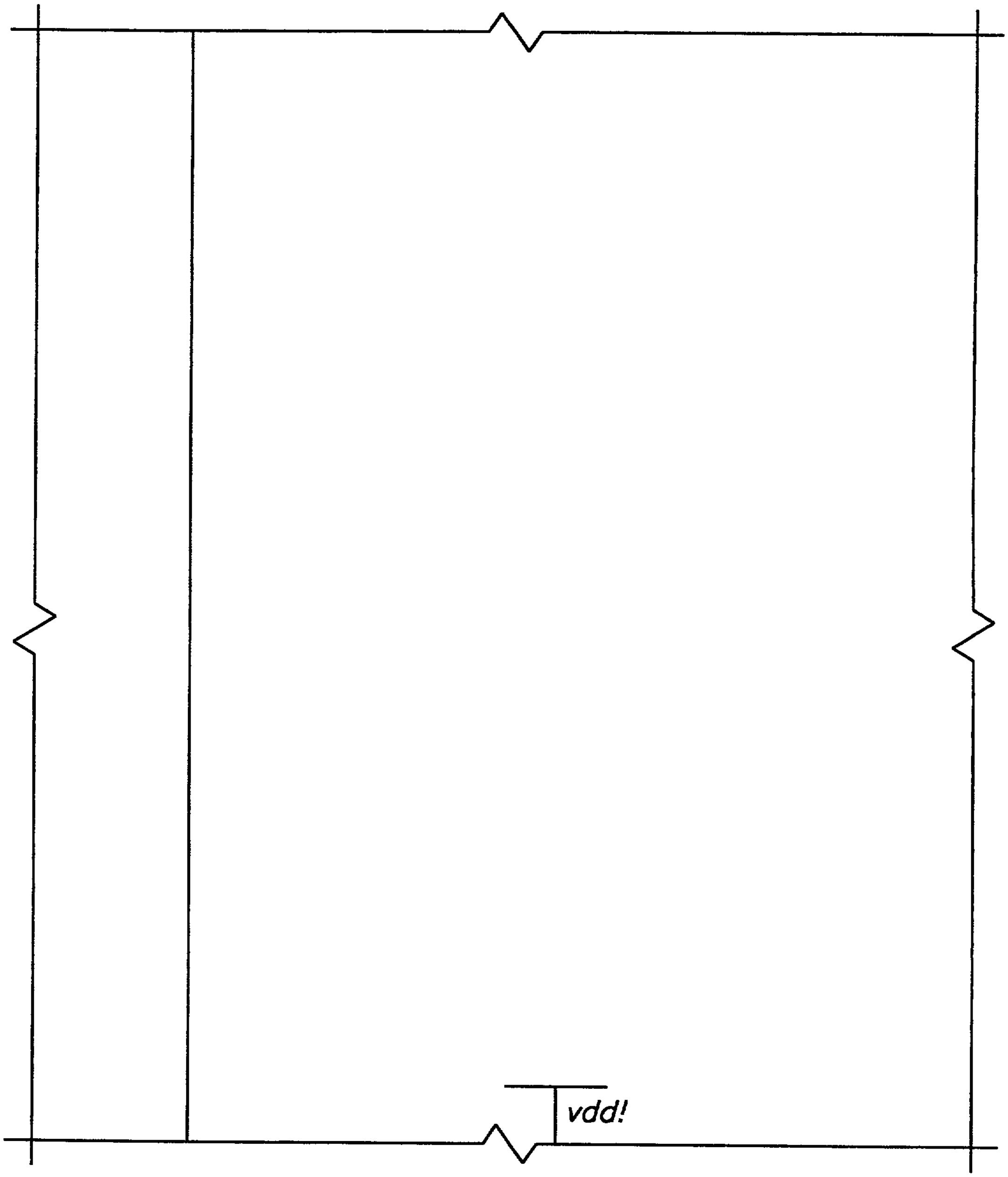


Fig 9.0103D0

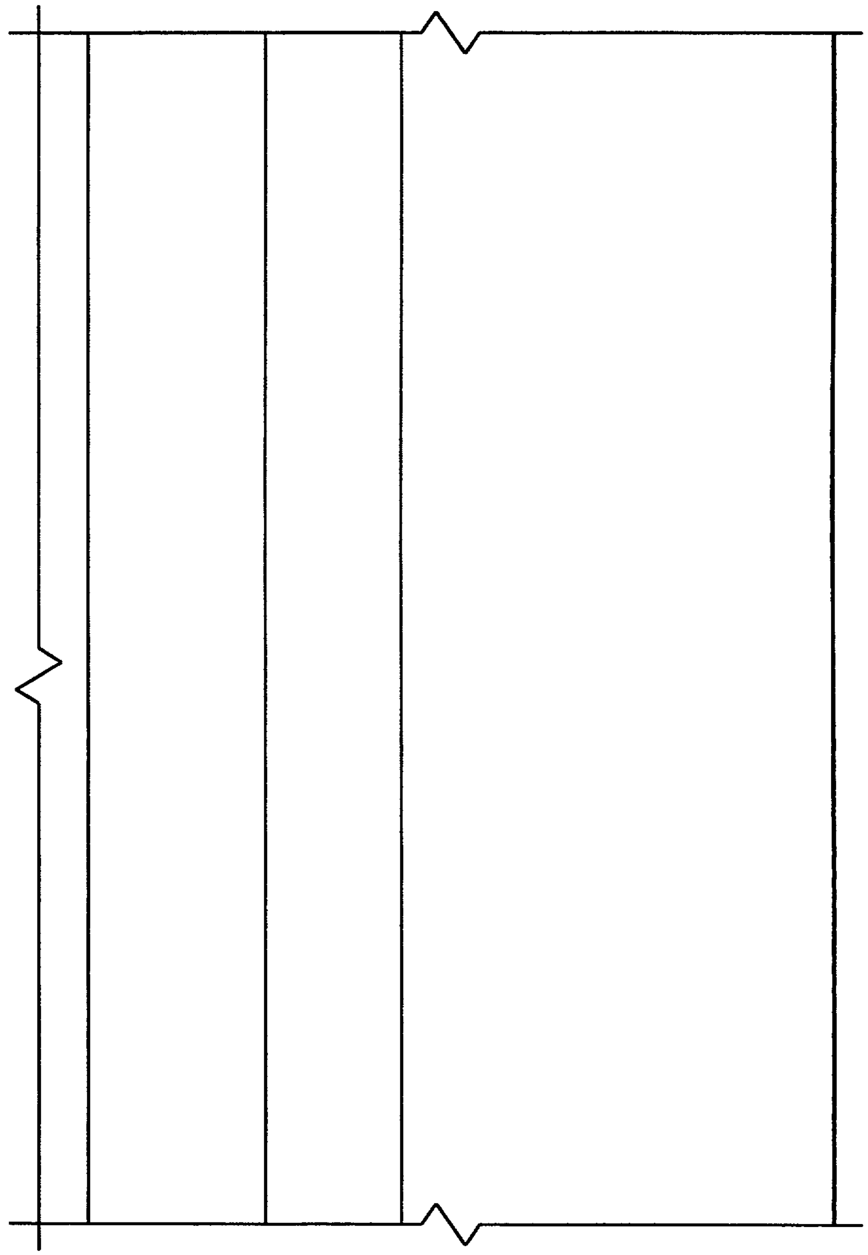


FIG 9.01103DP

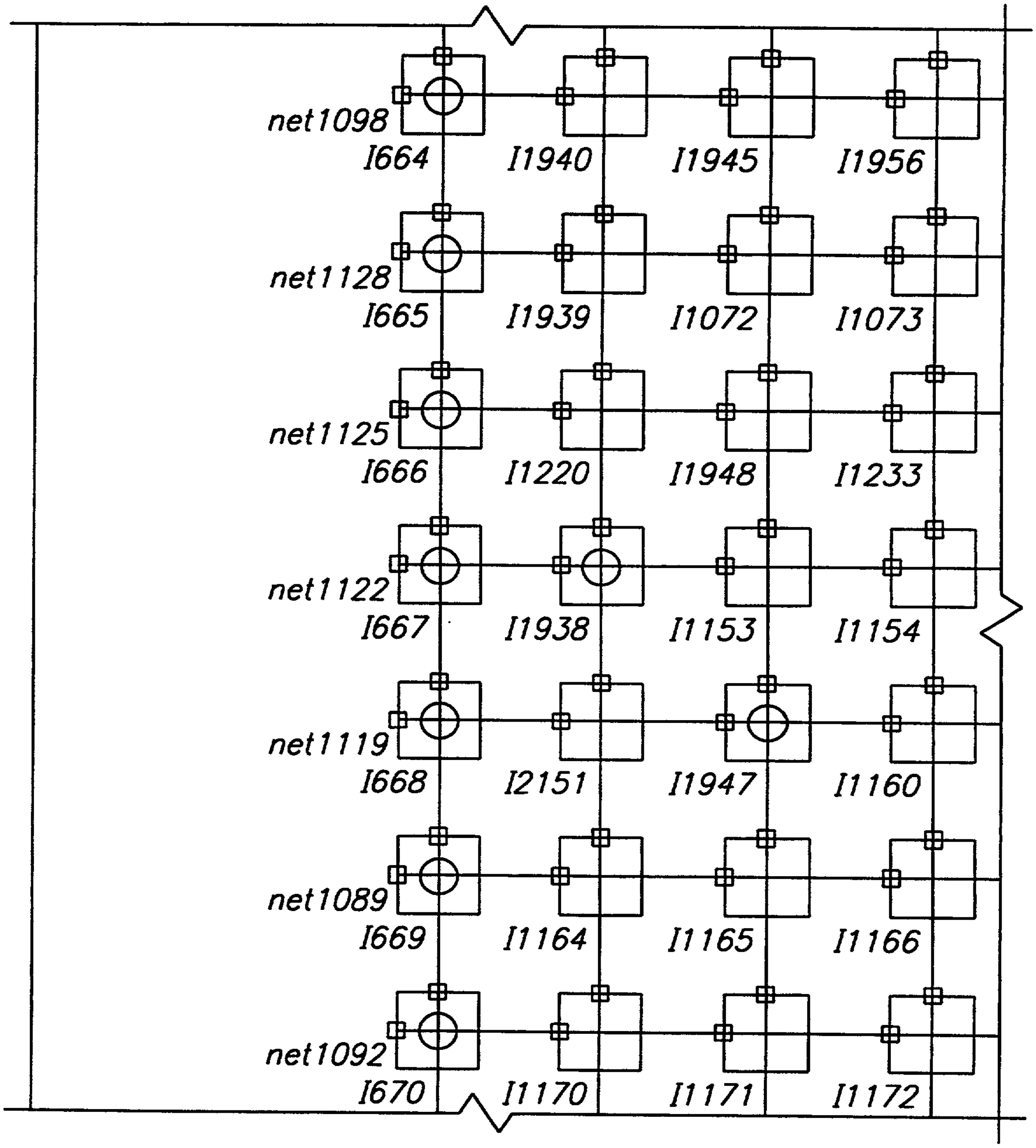

net1098
I664
I1940
I1945
I1956
net1128
I665
I1939
I1072
I1073
net1125
I666
I1220
I1948
I1233
net1122
I667
I1938
I1153
I1154
net1119
I668
I2151
I1947
I1160
net1089
I669
I1164
I1165
I1166
net1092
I670
I1170
I1171
I1172

Fig 9.0103EA

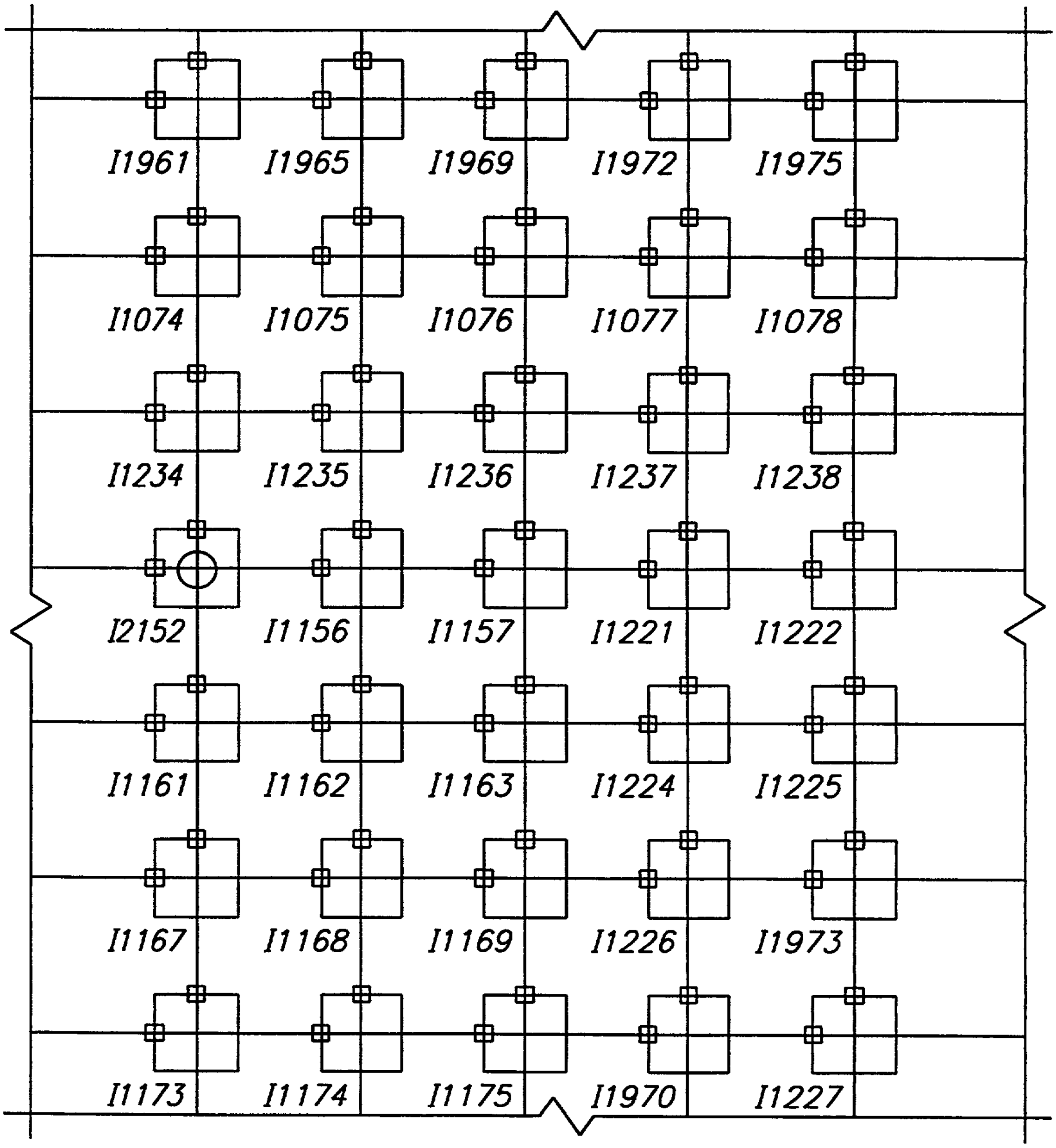

I1961
I1965
I1969
I1972
I1975
I1074
I1075
I1076
I1077
I1078
I1234
I1235
I1236
I1237
I1238
I2152
I1156
I1157
I1221
I1222
I1161
I1162
I1163
I1224
I1225
I1167
I1168
I1169
I1226
I1973
I1173
I1174
I1175
I1970
I1227

Fig 9.0103EB

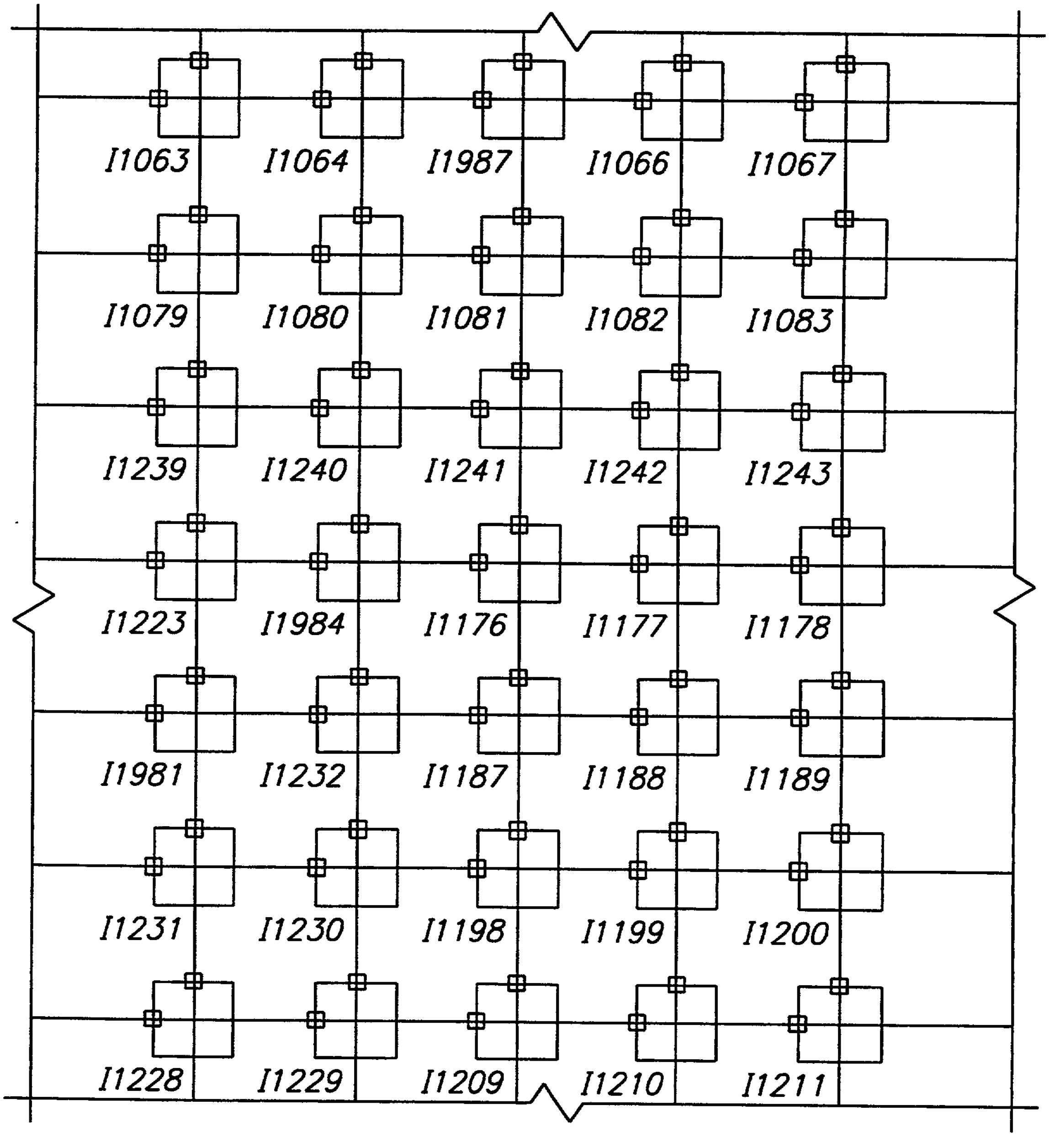
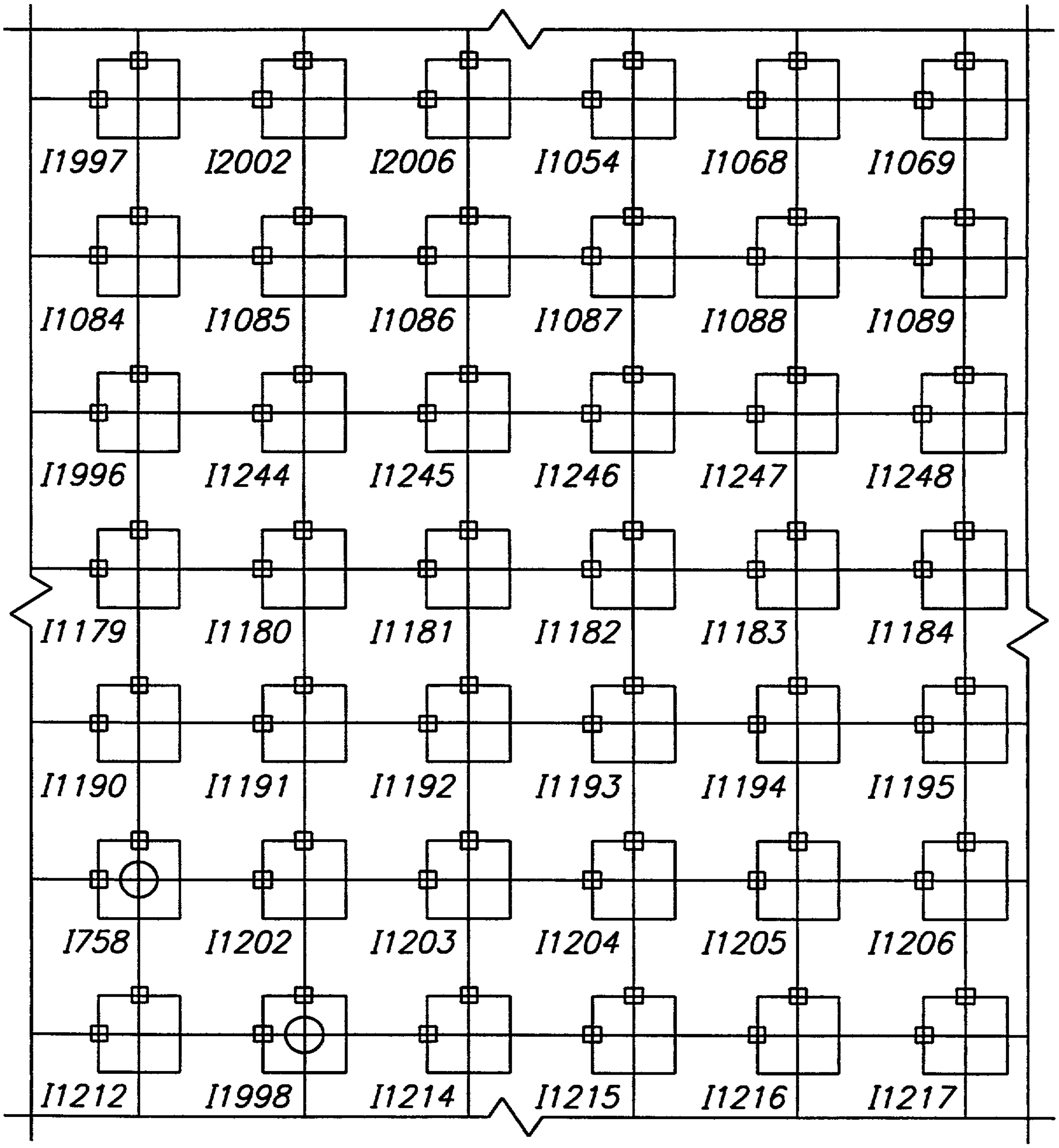

I1063
I1064
I1987
I1066
I1067
I1079
I1080
I1081
I1082
I1083
I1239
I1240
I1241
I1242
I1243
I1223
I1984
I1176
I1177
I1178
I1981
I1232
I1187
I1188
I1189
I1231
I1230
I1198
I1199
I1200
I1228
I1229
I1209
I1210
I1211

FIG 9.0103EC


I1997
I2002
I2006
I1054
I1068
I1069
I1084
I1085
I1086
I1087
I1088
I1089
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I1244
I1245
I1246
I1247
I1248
I1179
I1180
I1181
I1182
I1183
I1184
I1190
I1191
I1192
I1193
I1194
I1195
I758
I1202
I1203
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I1205
I1206
I1212
I1998
I1214
I1215
I1216
I1217

Fig 9.0103ED

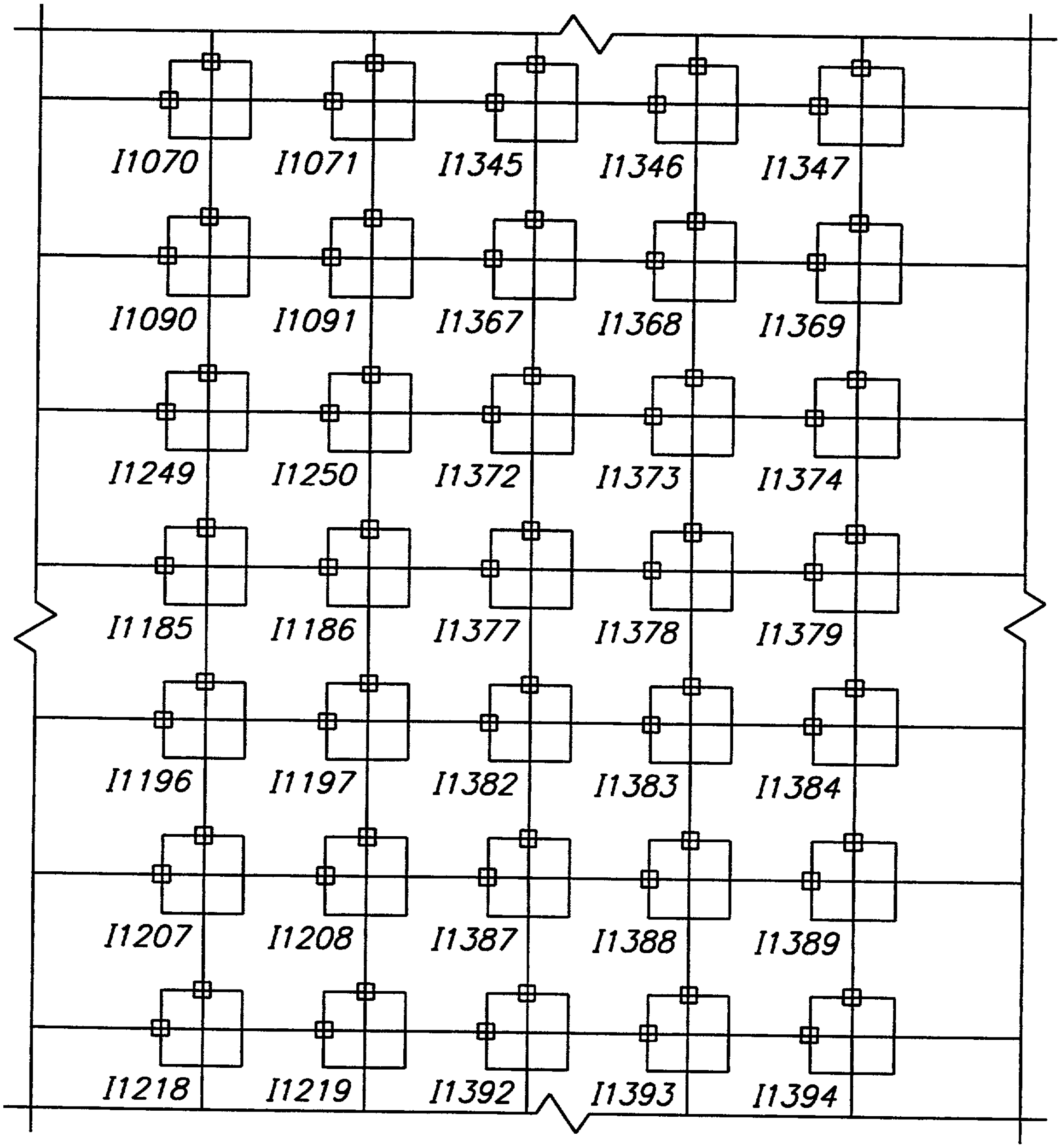
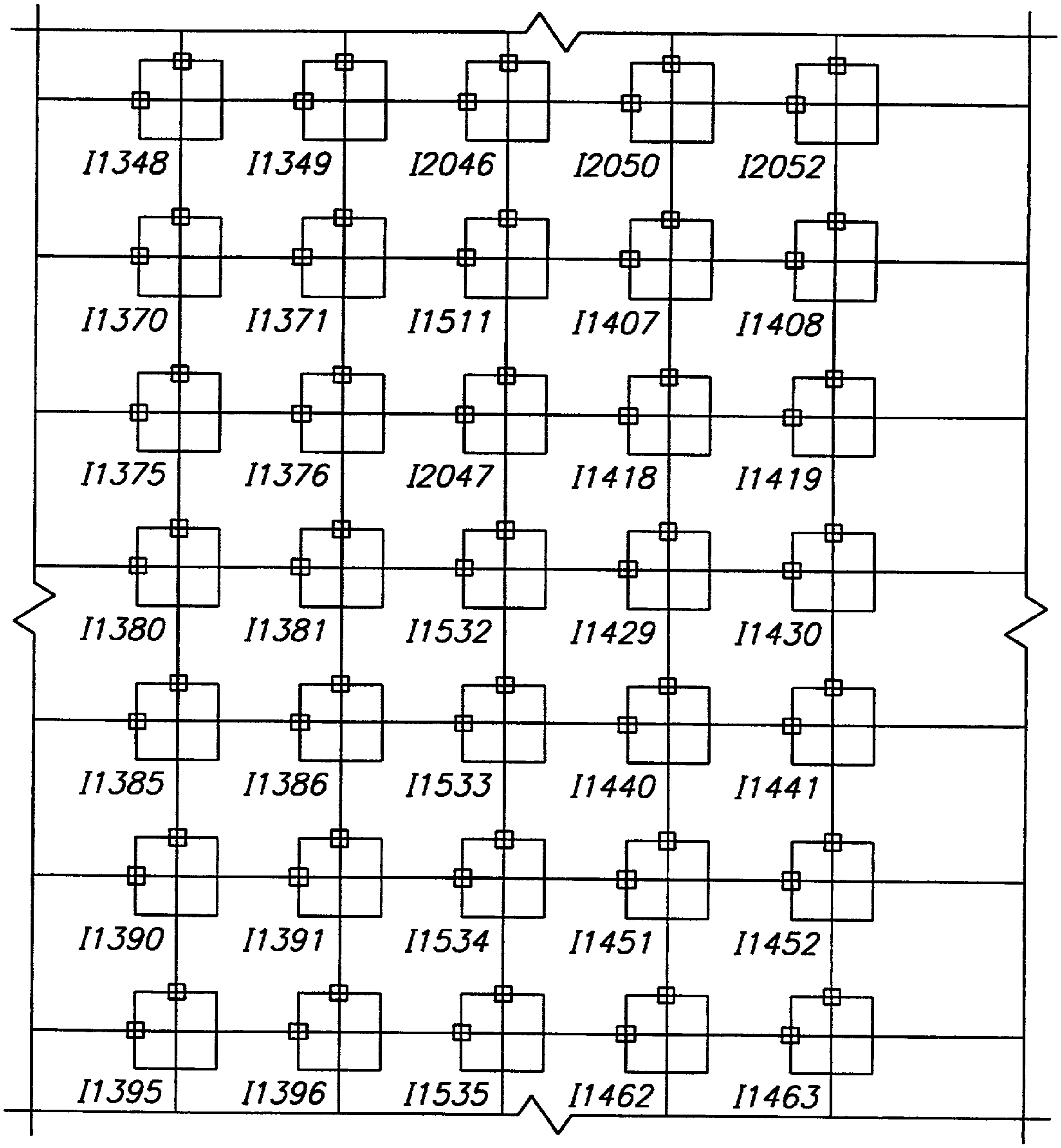

I1070
I1071
I1345
I1346
I1347
I1090
I1091
I1367
I1368
I1369
I1249
I1250
I1372
I1373
I1374
I1185
I1186
I1377
I1378
I1379
I1196
I1197
I1382
I1383
I1384
I1207
I1208
I1387
I1388
I1389
I1218
I1219
I1392
I1393
I1394

Fig 9.0103EE


I1348
I1349
I2046
I2050
I2052
I1370
I1371
I1511
I1407
I1408
I1375
I1376
I2047
I1418
I1419
I1380
I1381
I1532
I1429
I1430
I1385
I1386
I1533
I1440
I1441
I1390
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I1534
I1451
I1452
I1395
I1396
I1535
I1462
I1463

Fig 9.0103EF

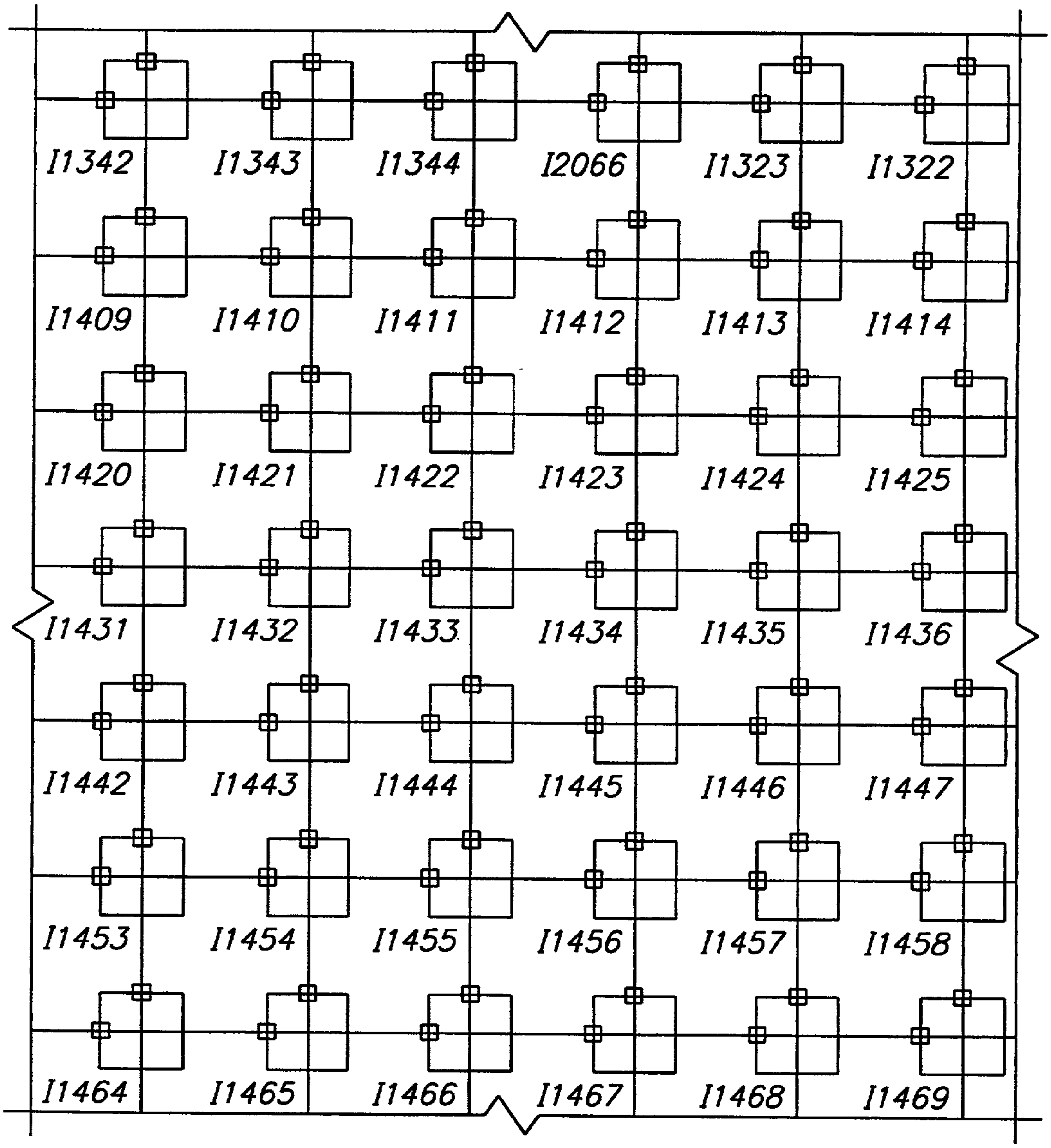

I1342
I1343
I1344
I2066
I1323
I1322
I1409
I1410
I1411
I1412
I1413
I1414
I1420
I1421
I1422
I1423
I1424
I1425
I1431
I1432
I1433
I1434
I1435
I1436
I1442
I1443
I1444
I1445
I1446
I1447
I1453
I1454
I1455
I1456
I1457
I1458
I1464
I1465
I1466
I1467
I1468
I1469

FIG 9.0103EG

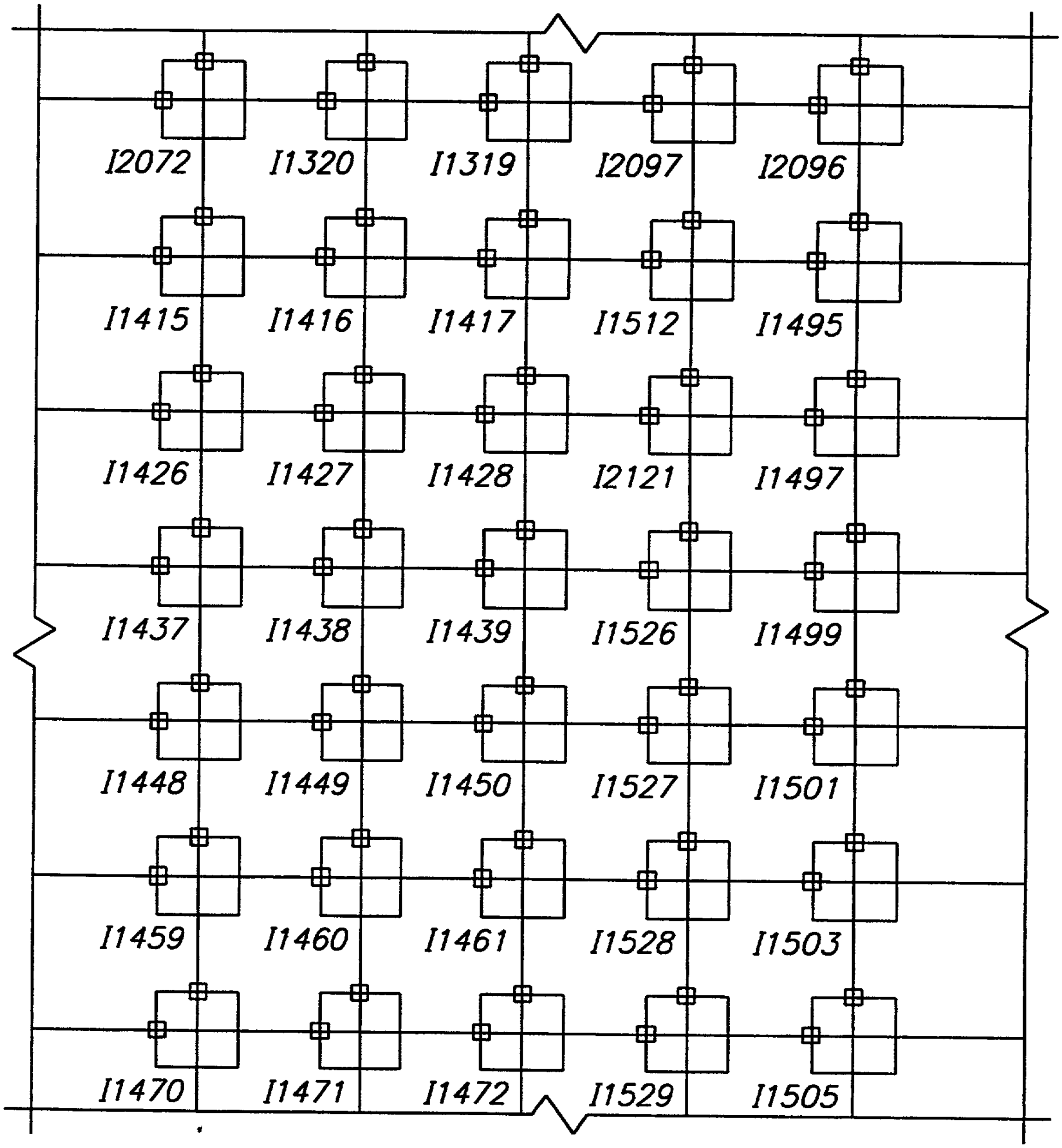

I2072
I1320
I1319
I2097
I2096
I1415
I1416
I1417
I1512
I1495
I1426
I1427
I1428
I2121
I1497
I1437
I1438
I1439
I1526
I1499
I1448
I1449
I1450
I1527
I1501
I1459
I1460
I1461
I1528
I1503
I1470
I1471
I1472
I1529
I1505

Fig 9.01.03EH

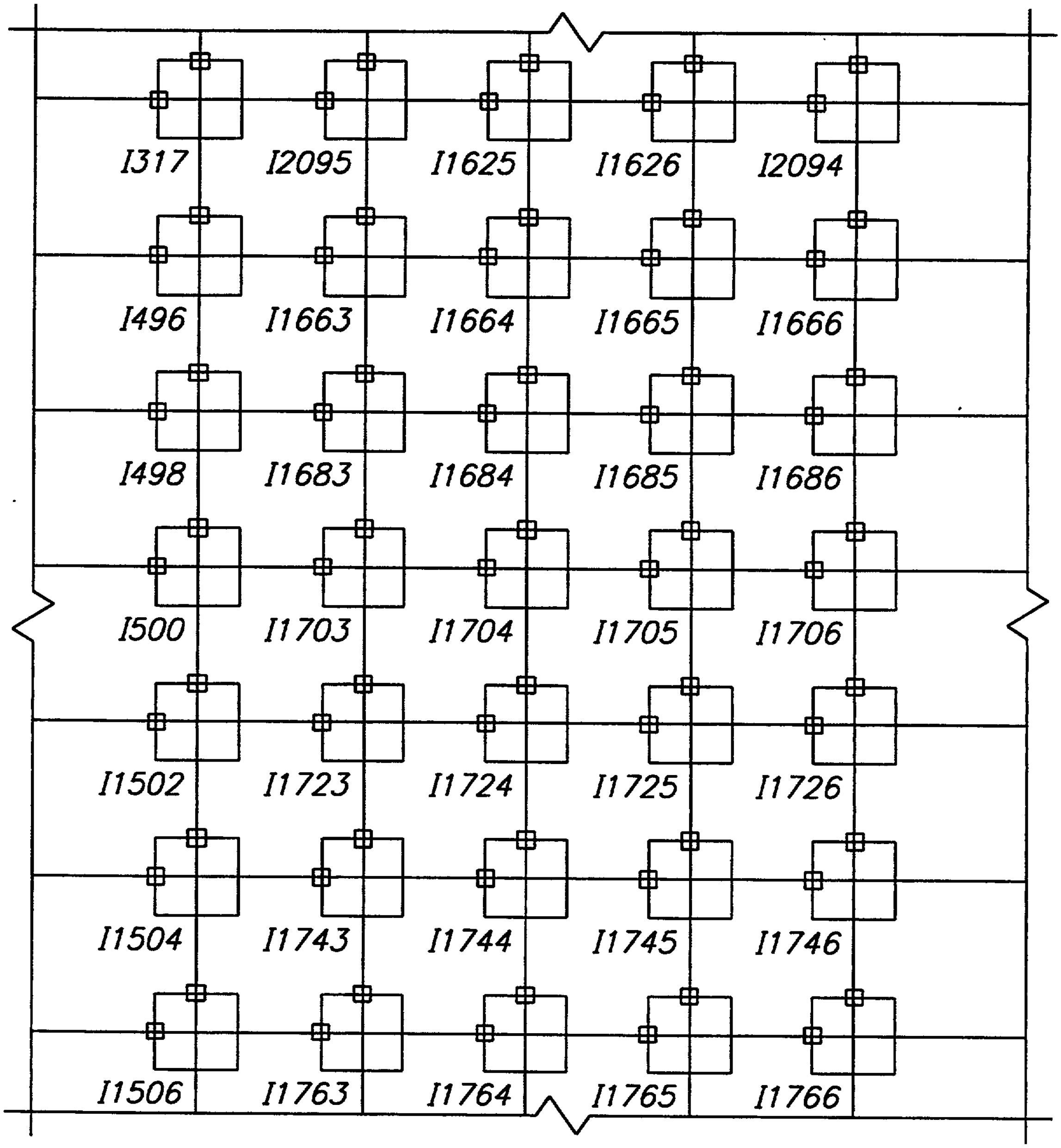

I317
I2095
I1625
I1626
I2094
I496
I1663
I1664
I1665
I1666
I498
I1683
I1684
I1685
I1686
I500
I1703
I1704
I1705
I1706
I1502
I1723
I1724
I1725
I1726
I1504
I1743
I1744
I1745
I1746
I1506
I1763
I1764
I1765
I1766

Fig 9.0103EI

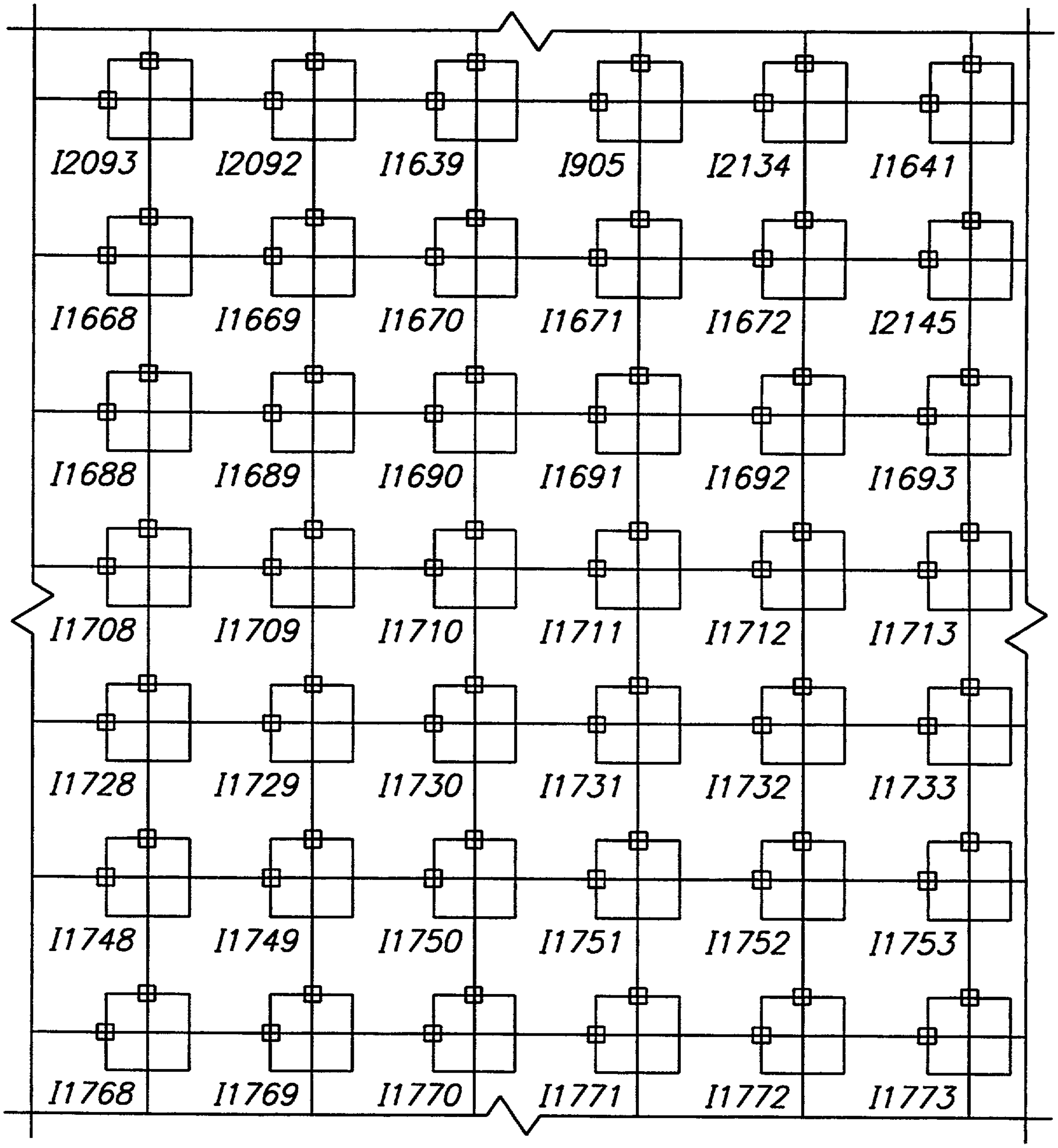

I2093
I2092
I1639
I905
I2134
I1641
I1668
I1669
I1670
I1671
I1672
I2145
I1688
I1689
I1690
I1691
I1692
I1693
I1708
I1709
I1710
I1711
I1712
I1713
I1728
I1729
I1730
I1731
I1732
I1733
I1748
I1749
I1750
I1751
I1752
I1753
I1768
I1769
I1770
I1771
I1772
I1773

FIG 9.01.03E.1

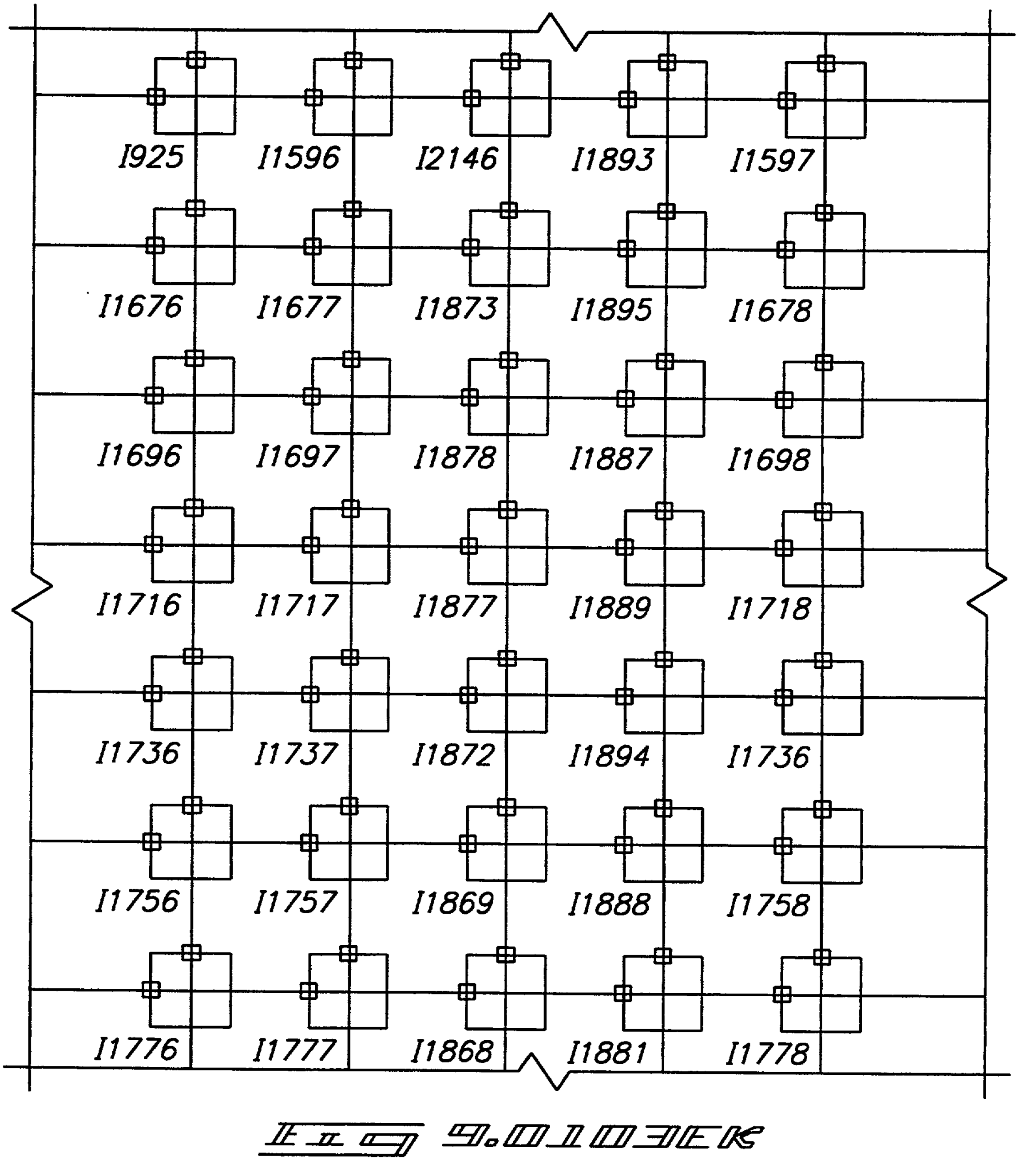

I925
I1596
I2146
I1893
I1597
I1676
I1677
I1873
I1895
I1678
I1696
I1697
I1878
I1887
I1698
I1716
I1717
I1877
I1889
I1718
I1736
I1737
I1872
I1894
I1736
I1756
I1757
I1869
I1888
I1758
I1776
I1777
I1868
I1881
I1778

Fig 9.0103EK

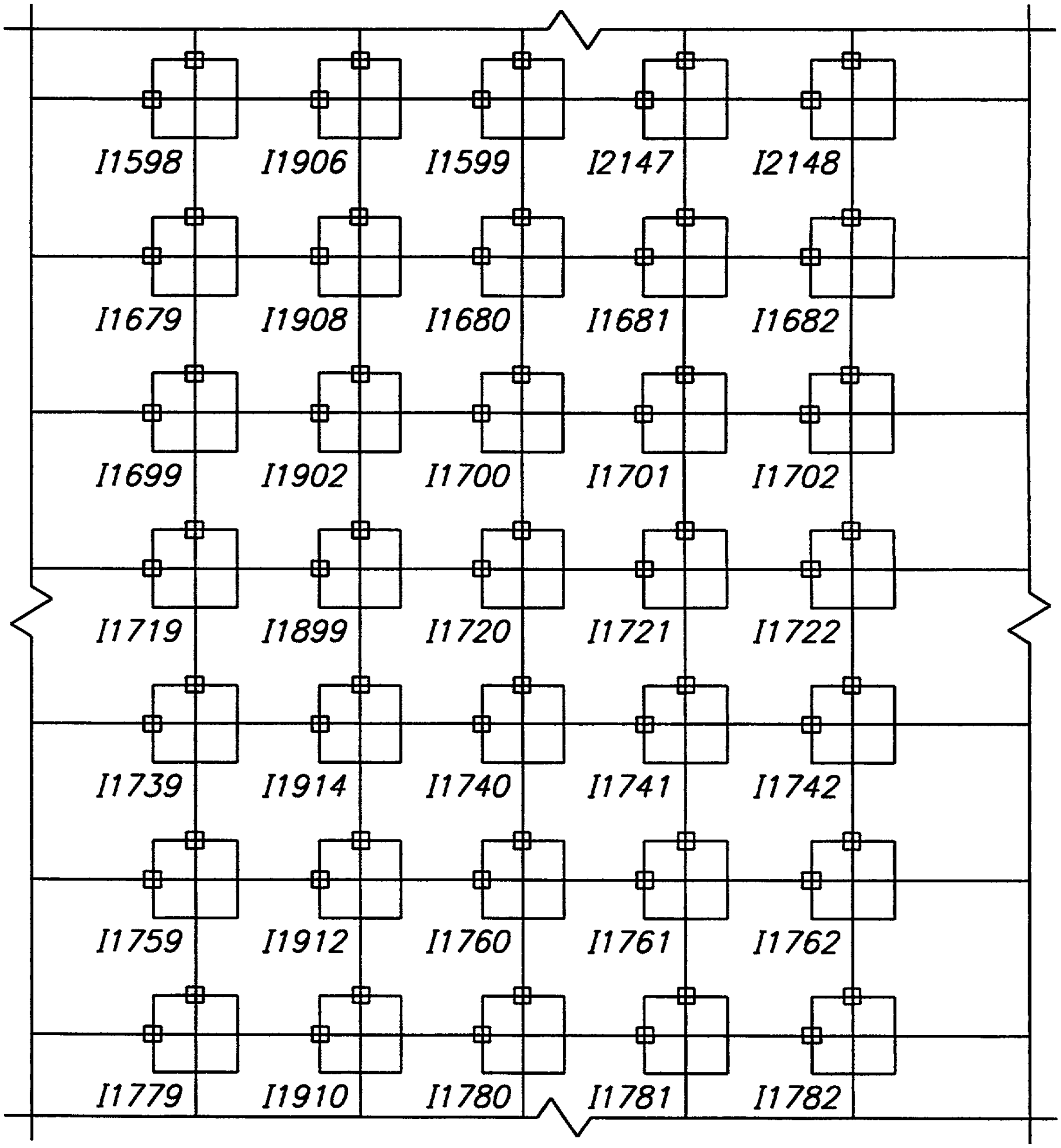

I1598
I1906
I1599
I2147
I2148
I1679
I1908
I1680
I1681
I1682
I1699
I1902
I1700
I1701
I1702
I1719
I1899
I1720
I1721
I1722
I1739
I1914
I1740
I1741
I1742
I1759
I1912
I1760
I1761
I1762
I1779
I1910
I1780
I1781
I1782

Fig 9.0103EL

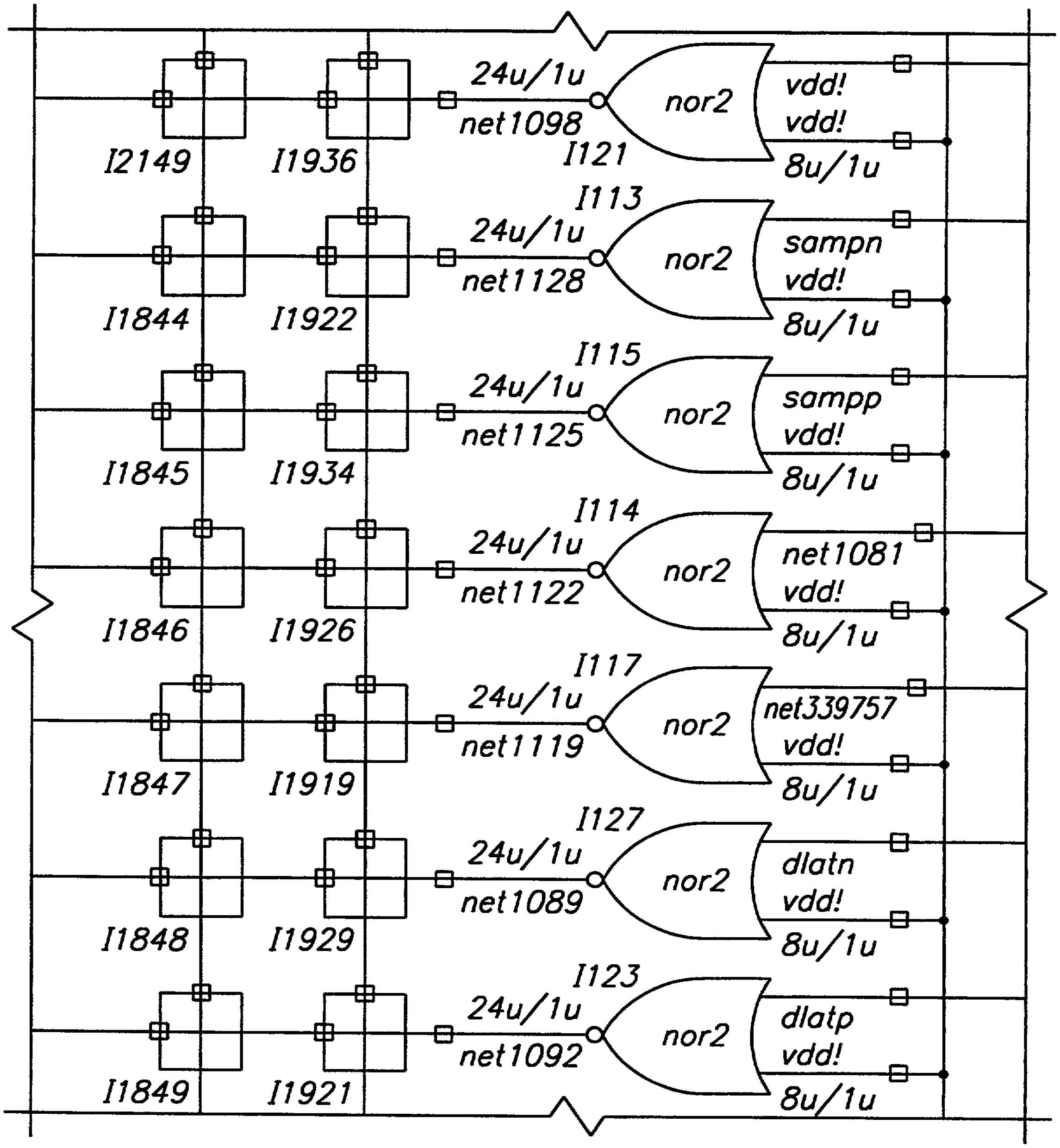

24u/1u
net1098
I121
nor2
vdd!
vdd!
8u/1u
I2149
I1936
I113
24u/1u
net1128
nor2
sampn
vdd!
8u/1u
I1844
I1922
I115
24u/1u
net1125
nor2
sampp
vdd!
8u/1u
I1845
I1934
I114
24u/1u
net1122
nor2
net1081
vdd!
8u/1u
I1846
I1926
I117
24u/1u
net1119
nor2
net339757
vdd!
8u/1u
I1847
I1919
I127
24u/1u
net1089
nor2
dlatn
vdd!
8u/1u
I1848
I1929
I123
24u/1u
net1092
nor2
dlatp
vdd!
8u/1u
I1849
I1921

Fig 9.0103EM

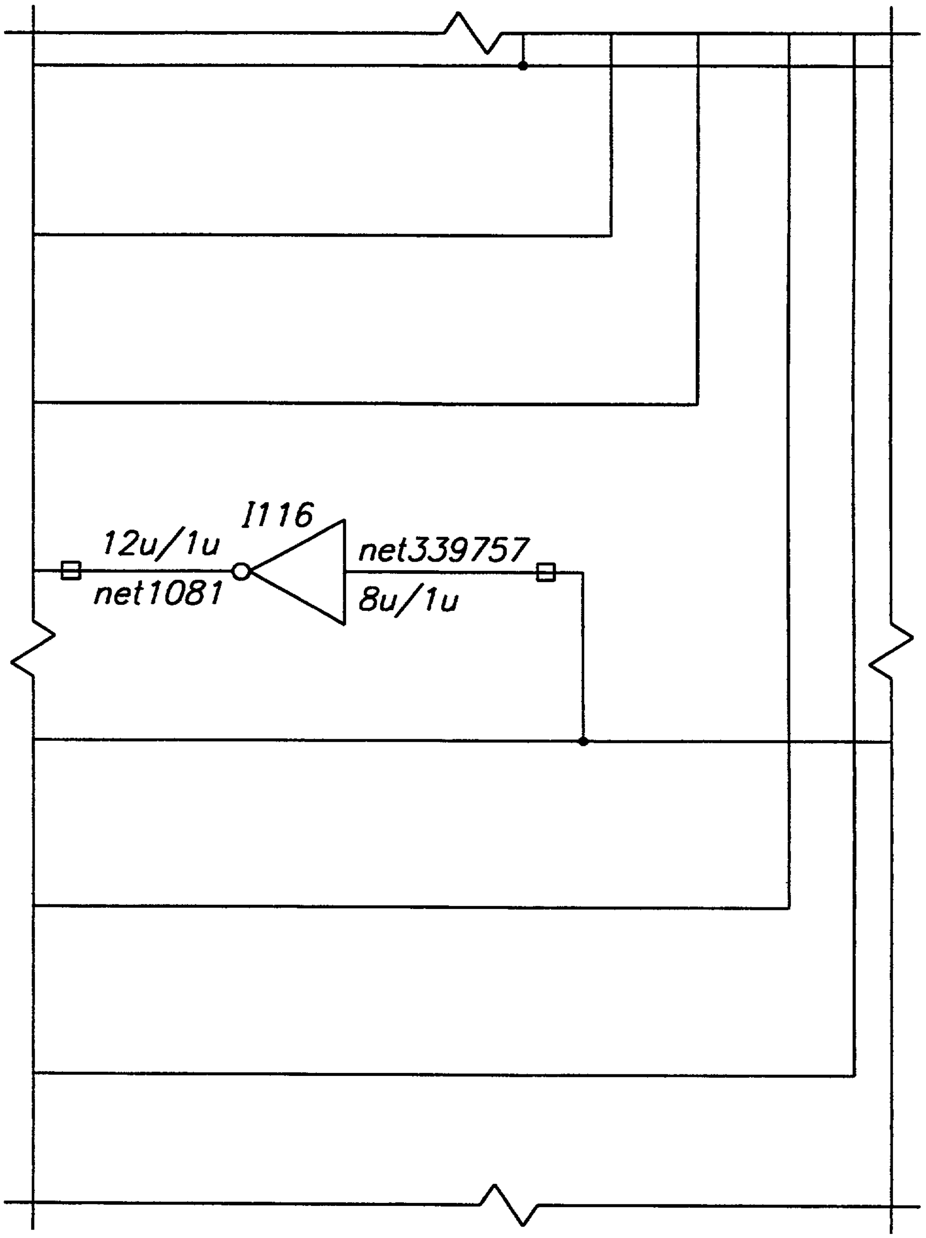


Fig 9.0103EN

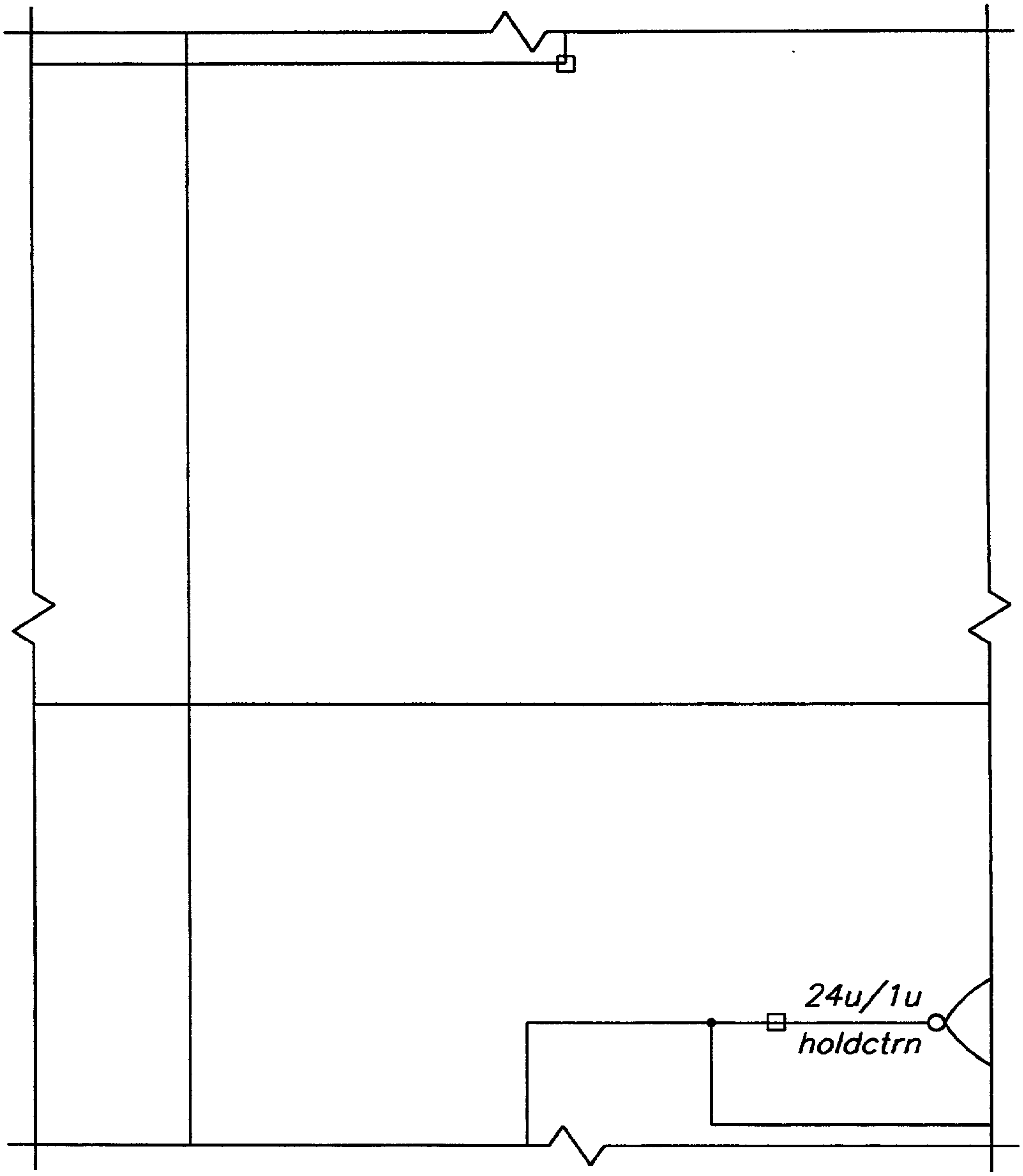


Fig 9.010360

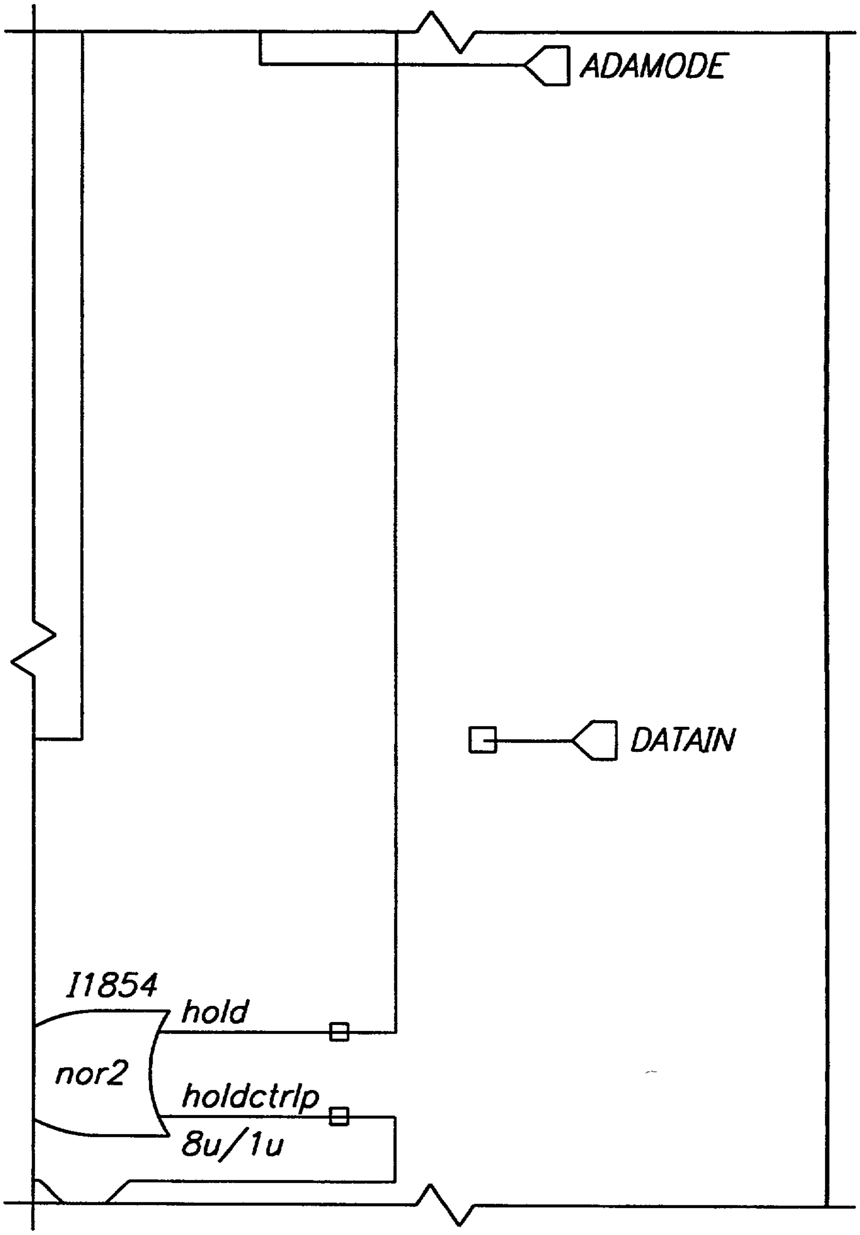
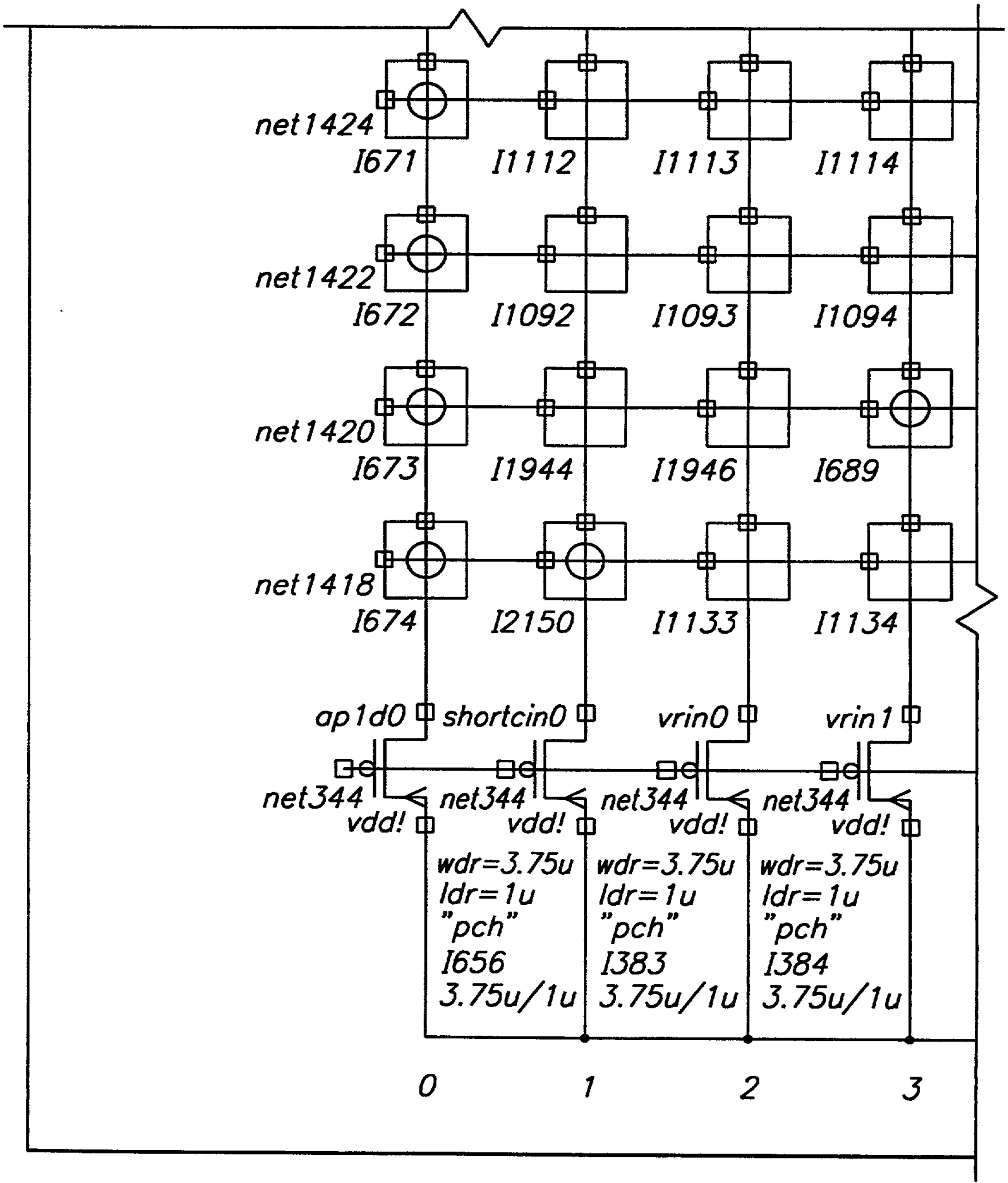


Fig 9.0103EP


net1424
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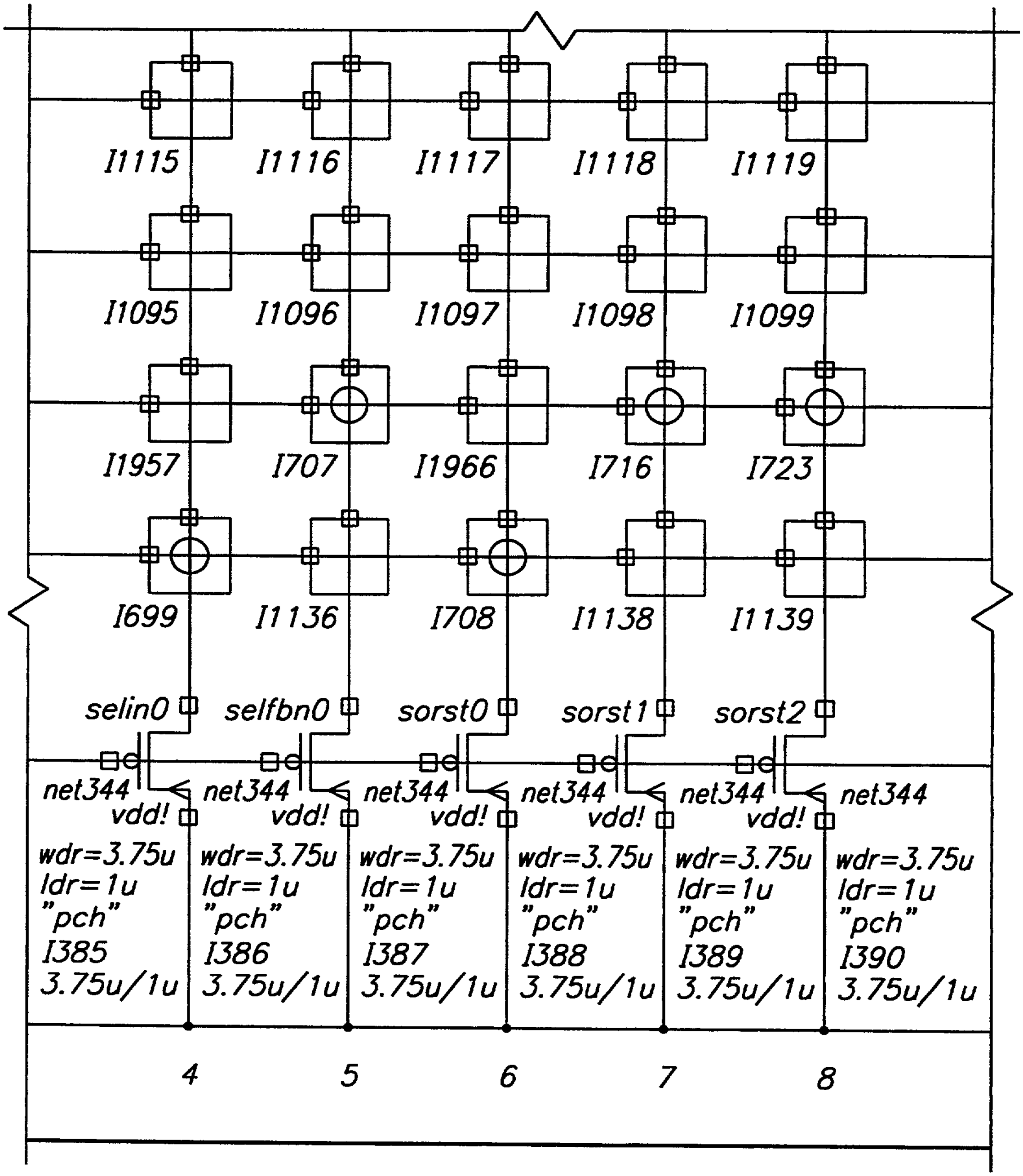
I1112
I1113
I1114
net1422
I672
I1092
I1093
I1094
net1420
I673
I1944
I1946
I689
net1418
I674
I2150
I1133
I1134
ap1d0
shortcin0
vrin0
vrin1
net344
net344
net344
net344
vdd!
vdd!
vdd!
vdd!
wdr=3.75u
ldr=1u
"pch"
I656
3.75u/1u
wdr=3.75u
ldr=1u
"pch"
I383
3.75u/1u
wdr=3.75u
ldr=1u
"pch"
I384
3.75u/1u
0
1
2
3

Fig 9.0103FA


I1115
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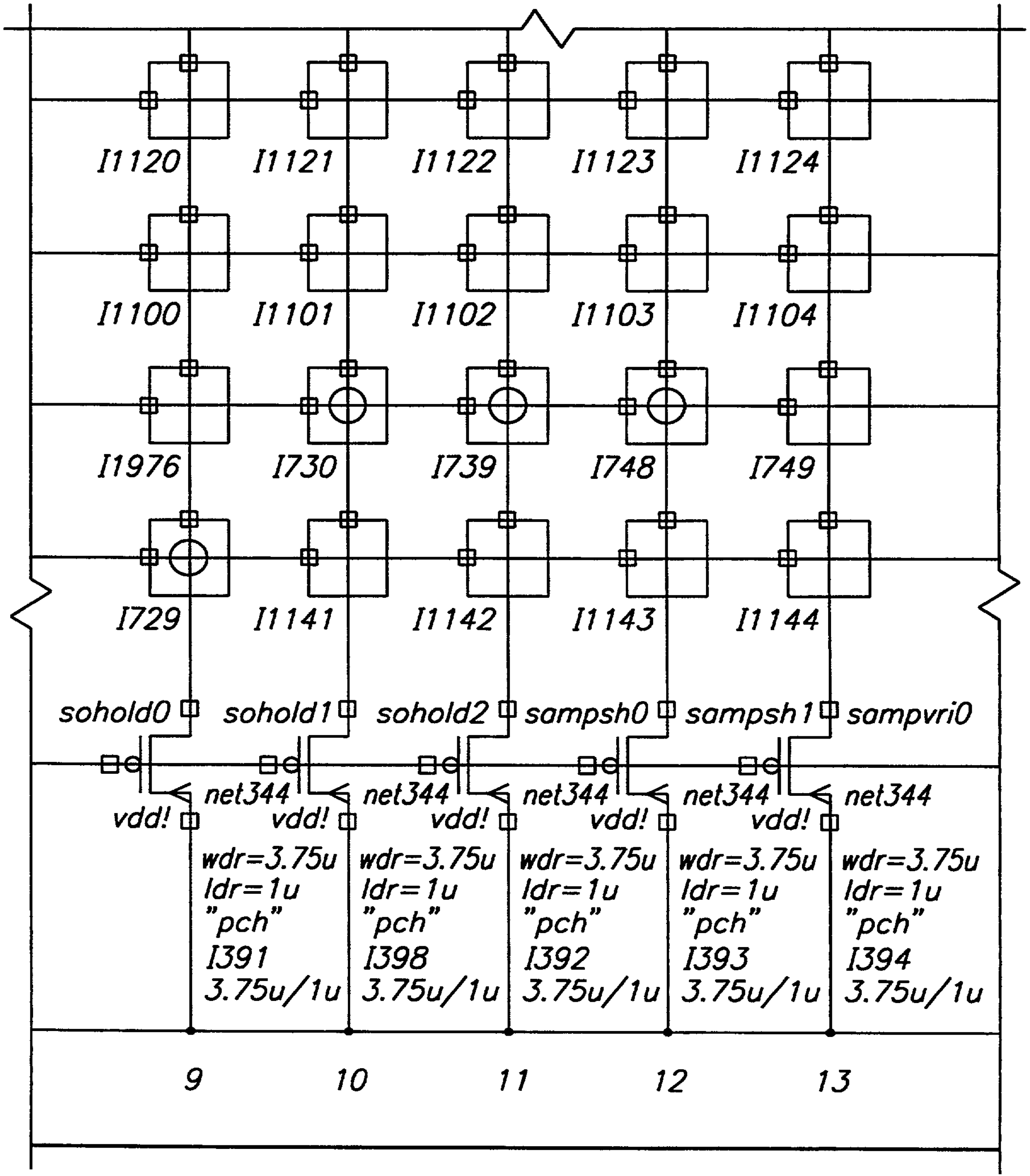
I1117
I1118
I1119
I1095
I1096
I1097
I1098
I1099
I1957
I707
I1966
I716
I723
I699
I1136
I708
I1138
I1139
selin0
selfbn0
sorst0
sorst1
sorst2
net344
vdd!
net344
vdd!
net344
vdd!
net344
vdd!
net344
vdd!
net344
wdr=3.75u
ldr=1u
"pch"
I385
3.75u/1u
wdr=3.75u
ldr=1u
"pch"
I386
3.75u/1u
wdr=3.75u
ldr=1u
"pch"
I387
3.75u/1u
wdr=3.75u
ldr=1u
"pch"
I388
3.75u/1u
wdr=3.75u
ldr=1u
"pch"
I389
3.75u/1u
wdr=3.75u
ldr=1u
"pch"
I390
3.75u/1u
4
5
6
7
8

Fig 9.0103FB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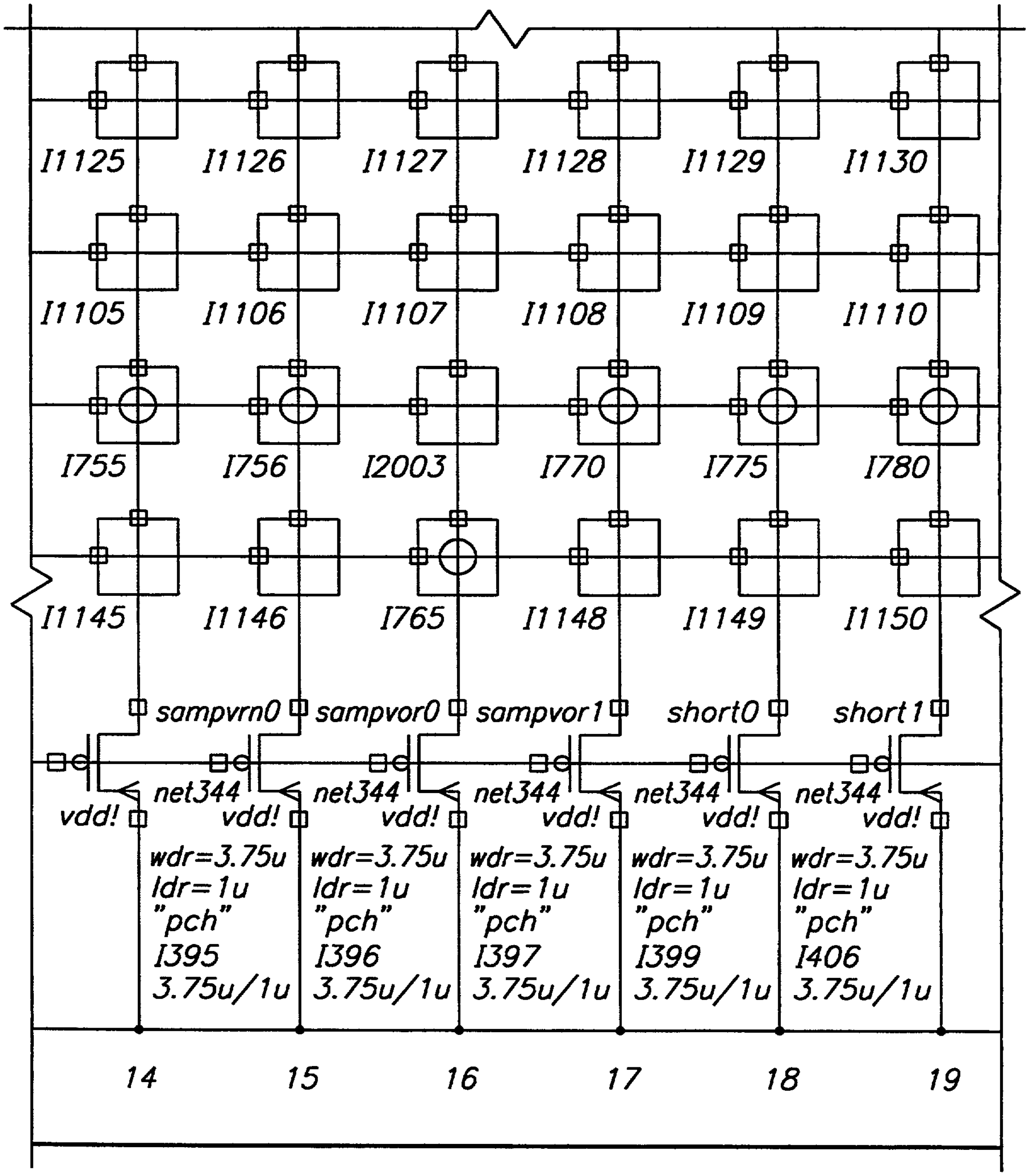
I1122
I1123
I1124
I1100
I1101
I1102
I1103
I1104
I1976
I730
I739
I748
I749
I729
I1141
I1142
I1143
I1144
sohold0
sohold1
sohold2
sampsh0
sampsh1
sampvri0
net344
net344
net344
net344
net344
vdd!
vdd!
vdd!
vdd!
vdd!
wdr=3.75u
ldr=1u
"pch"
I391
3.75u/1u
wdr=3.75u
ldr=1u
"pch"
I398
3.75u/1u
wdr=3.75u
ldr=1u
"pch"
I392
3.75u/1u
wdr=3.75u
ldr=1u
"pch"
I393
3.75u/1u
wdr=3.75u
ldr=1u
"pch"
I394
3.75u/1u
9
10
11
12
13

Fig 9.0103FC


I1125
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I1127
I1128
I1129
I1130
I1105
I1106
I1107
I1108
I1109
I1110
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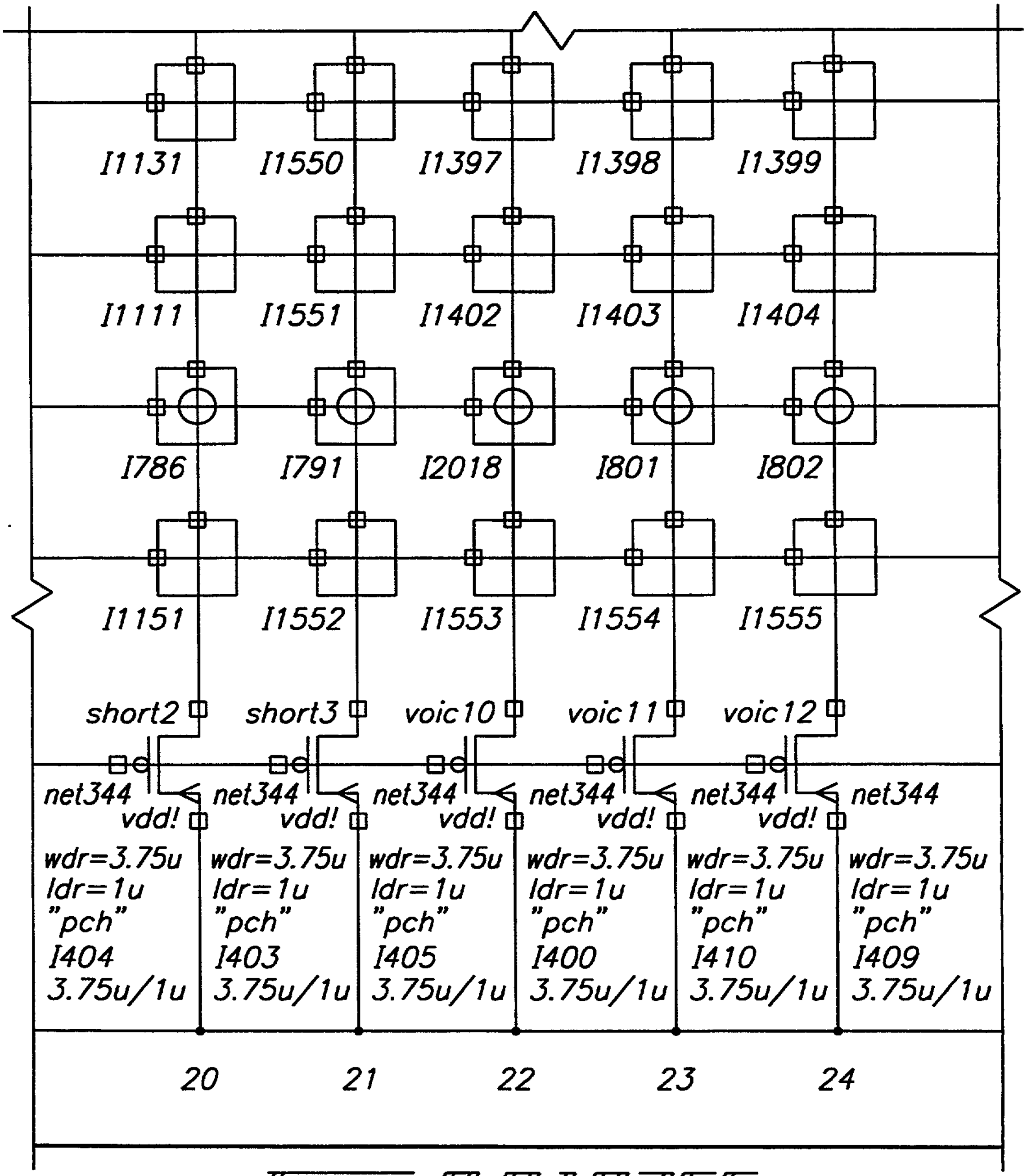
I756
I2003
I770
I775
I780
I1145
I1146
I765
I1148
I1149
I1150
sampvrn0
sampvor0
sampvor1
short0
short1
net344
net344
net344
net344
net344
vdd!
vdd!
vdd!
vdd!
vdd!
vdd!
wdr=3.75u
ldr=1u
"pch"
I395
3.75u/1u
wdr=3.75u
ldr=1u
"pch"
I396
3.75u/1u
wdr=3.75u
ldr=1u
"pch"
I397
3.75u/1u
wdr=3.75u
ldr=1u
"pch"
I399
3.75u/1u
wdr=3.75u
ldr=1u
"pch"
I406
3.75u/1u
14
15
16
17
18
19

Fig 9.0103FD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I1550
I1397
I1398
I1399
I1111
I1551
I1402
I1403
I1404
I786
I791
I2018
I801
I802
I1151
I1552
I1553
I1554
I1555
short2
short3
voic10
voic11
voic12
net344
net344
net344
net344
net344
net344
vdd!
vdd!
vdd!
vdd!
vdd!
wdr=3.75u
ldr=1u
"pch"
I404
3.75u/1u
wdr=3.75u
ldr=1u
"pch"
I403
3.75u/1u
wdr=3.75u
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"pch"
I405
3.75u/1u
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ldr=1u
"pch"
I410
3.75u/1u
wdr=3.75u
ldr=1u
"pch"
I409
3.75u/1u
20
21
22
23
24

Fig 9.0103FE

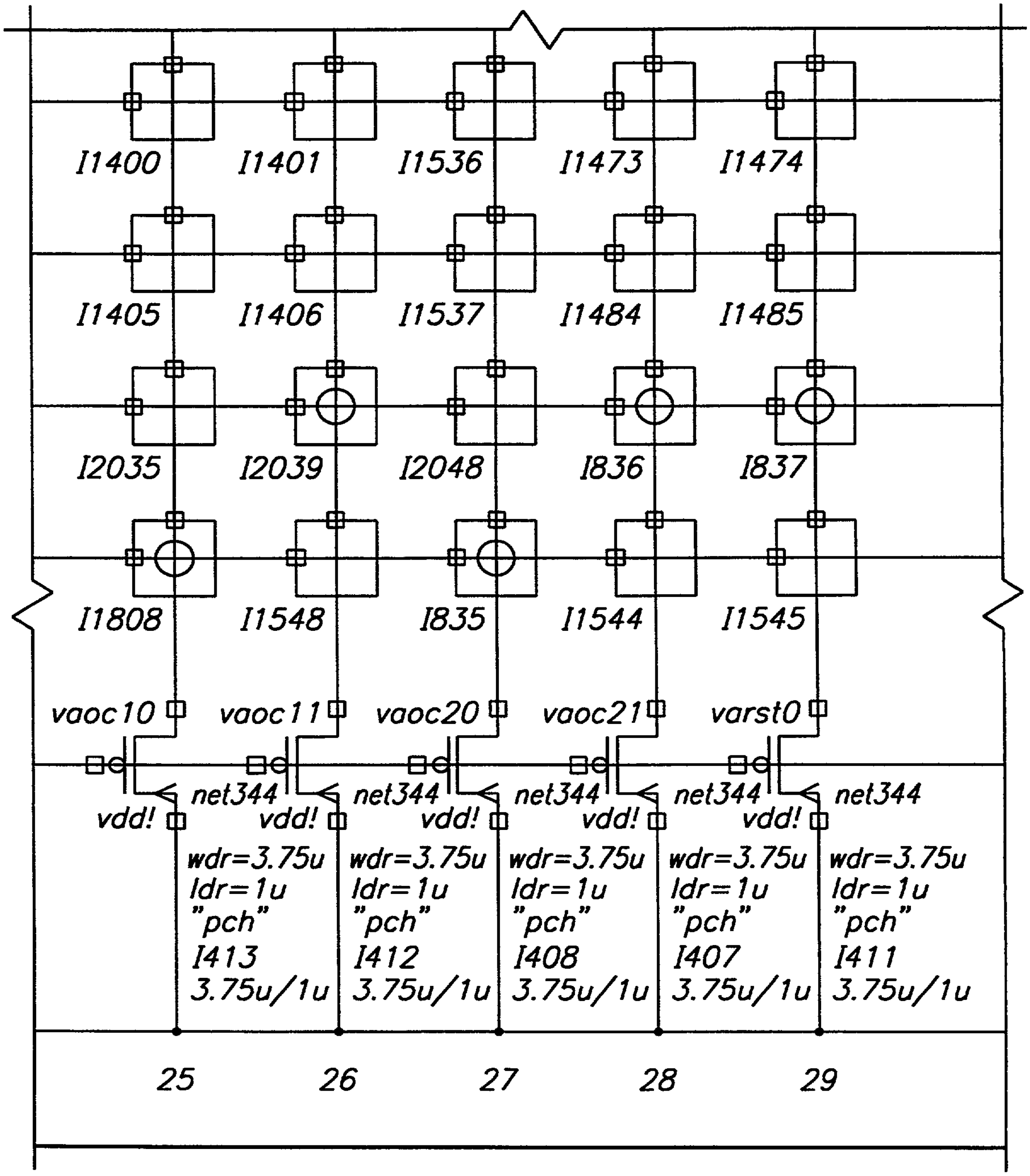
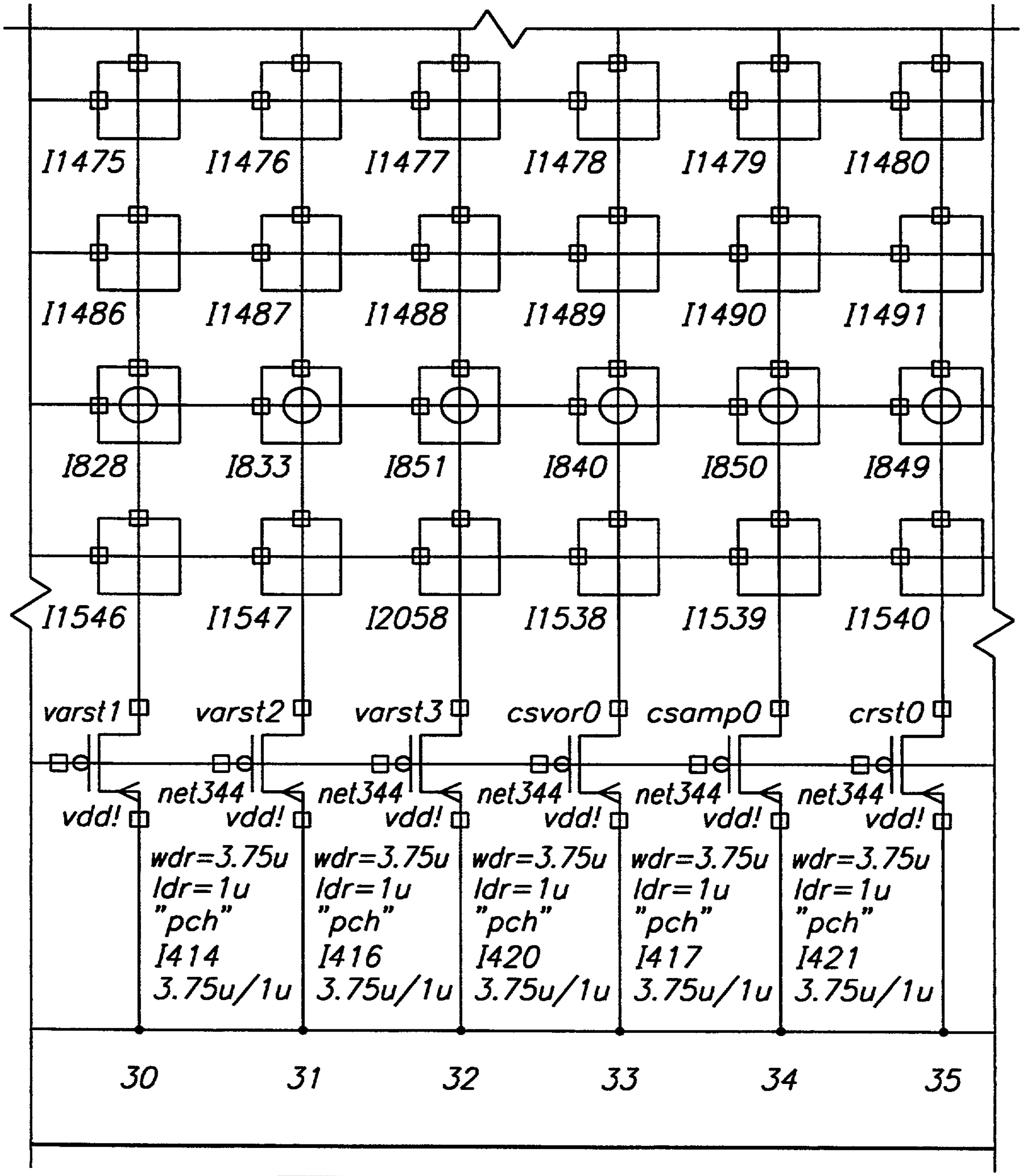


Fig 9.01003FF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I1477
I1478
I1479
I1480
I1486
I1487
I1488
I1489
I1490
I1491
I828
I833
I851
I840
I850
I849
I1546
I1547
I2058
I1538
I1539
I1540
varst1
varst2
varst3
csvor0
csamp0
crst0
net344
net344
net344
net344
net344
vdd!
vdd!
vdd!
vdd!
vdd!
vdd!
wdr=3.75u
ldr=1u
"pch"
I414
3.75u/1u
wdr=3.75u
ldr=1u
"pch"
I416
3.75u/1u
wdr=3.75u
ldr=1u
"pch"
I420
3.75u/1u
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I417
3.75u/1u
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"pch"
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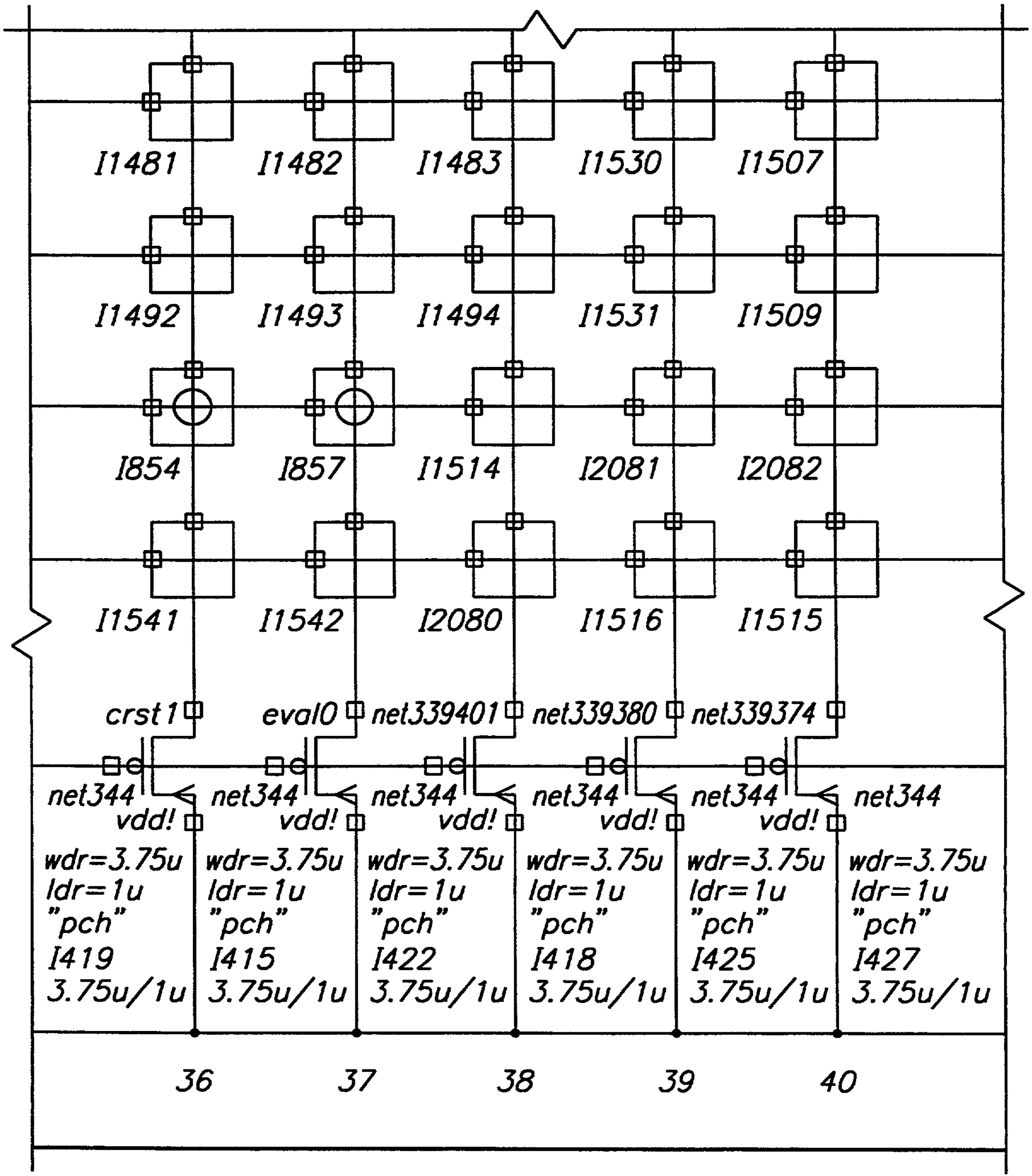
3.75u/1u
30
31
32
33
34
35

Fig 9.0103FG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I1509
I854
I857
I1514
I2081
I2082
I1541
I1542
I2080
I1516
I1515
crst1
eval0
net339401
net339380
net339374
net344
net344
net344
net344
net344
net344
vdd!
vdd!
vdd!
vdd!
vdd!
wdr=3.75u
ldr=1u
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3.75u/1u
wdr=3.75u
ldr=1u
"pch"
I415
3.75u/1u
wdr=3.75u
ldr=1u
"pch"
I422
3.75u/1u
wdr=3.75u
ldr=1u
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I418
3.75u/1u
wdr=3.75u
ldr=1u
"pch"
I425
3.75u/1u
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ldr=1u
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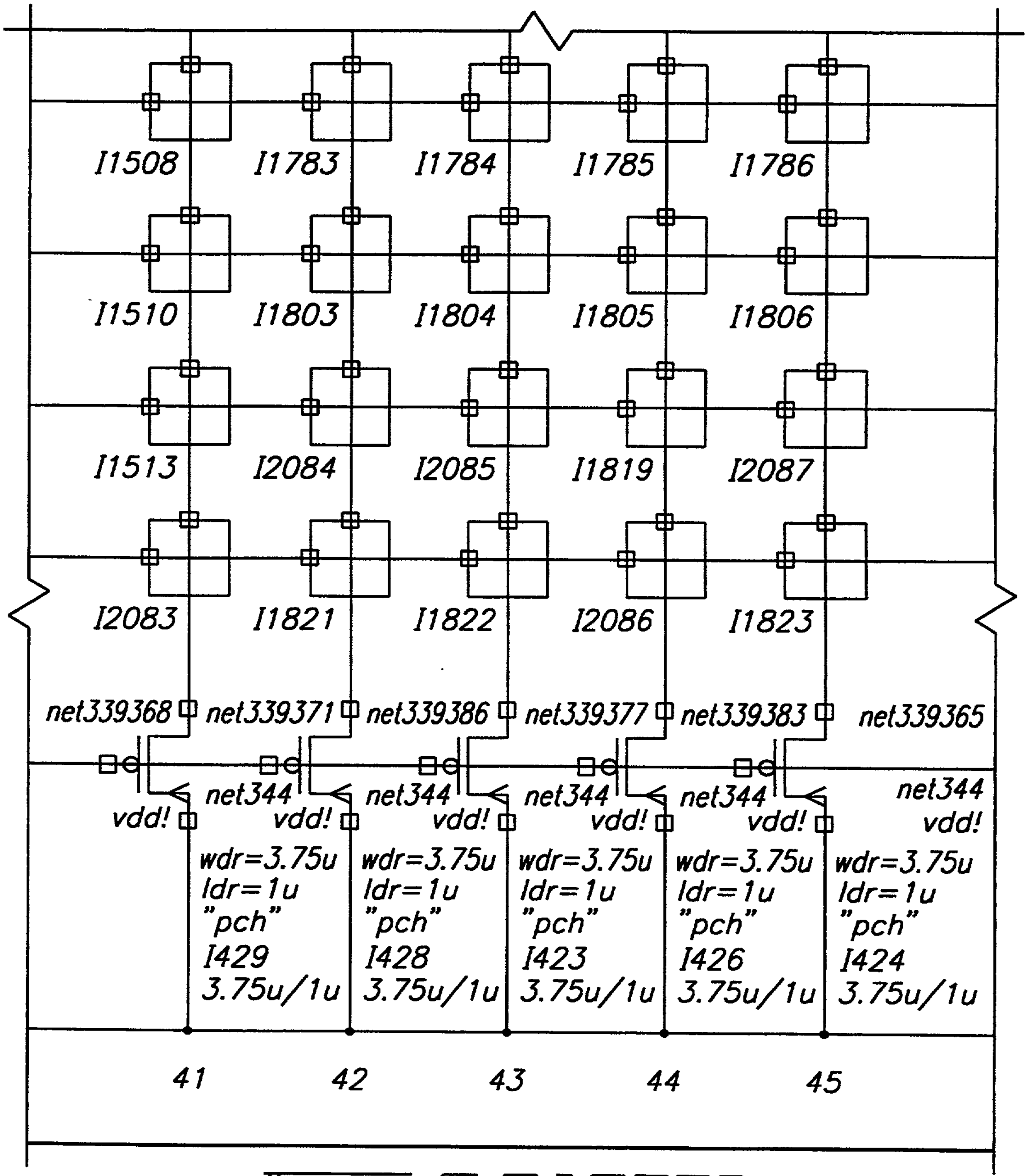
3.75u/1u
36
37
38
39
40

Fig 9.0103FH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I1786
I1510
I1803
I1804
I1805
I1806
I1513
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I2085
I1819
I2087
I2083
I1821
I1822
I2086
I1823
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net339386
net339377
net339383
net339365
net344
vdd!
net344
vdd!
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vdd!
net344
vdd!
net344
vdd!
net344
vdd!
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3.75u/1u
wdr=3.75u
ldr=1u
"pch"
I428
3.75u/1u
wdr=3.75u
ldr=1u
"pch"
I423
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wdr=3.75u
ldr=1u
"pch"
I426
3.75u/1u
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ldr=1u
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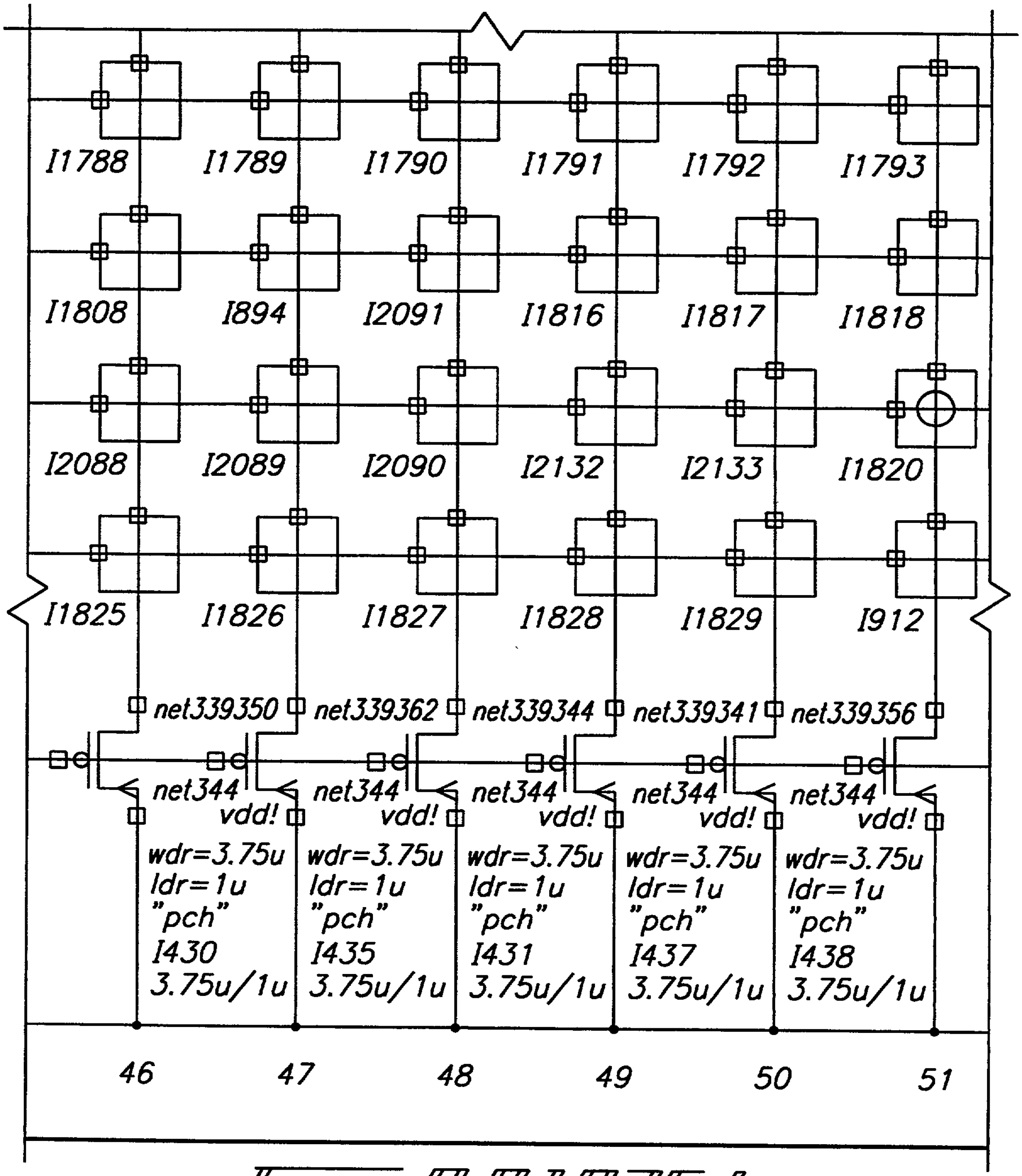
I424
3.75u/1u
41
42
43
44
45

Fig 9.0103FI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I1793
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I2091
I1816
I1817
I1818
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I2090
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I2133
I1820
I1825
I1826
I1827
I1828
I1829
I912
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net339344
net339341
net339356
net344
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vdd!
net344
vdd!
net344
vdd!
net344
vdd!
vdd!
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ldr=1u
"pch"
I435
3.75u/1u
wdr=3.75u
ldr=1u
"pch"
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wdr=3.75u
ldr=1u
"pch"
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3.75u/1u
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"pch"
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3.75u/1u
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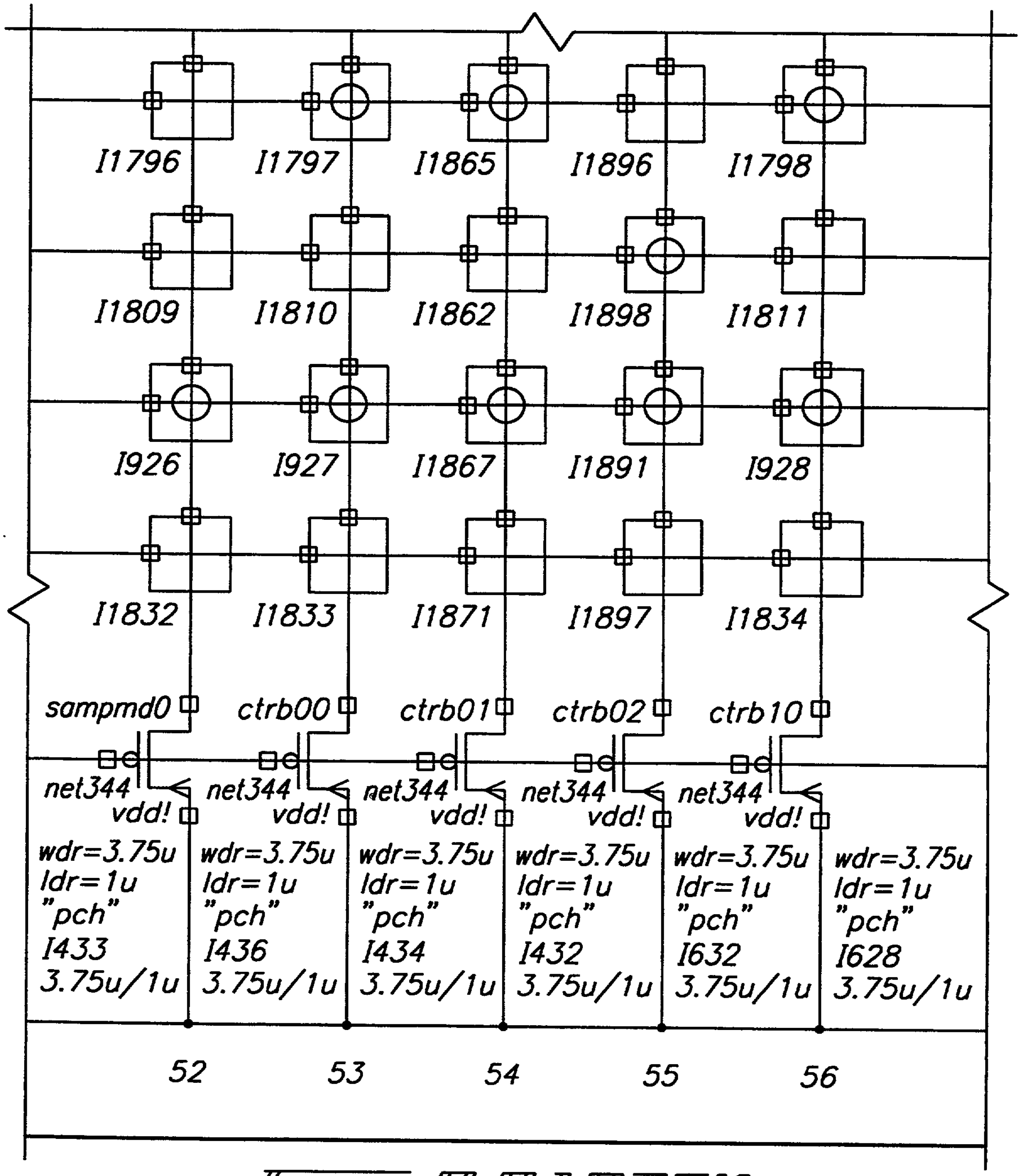
49
50
51

Fig 9.0103Fa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I1896
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I1810
I1862
I1898
I1811
I926
I927
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I928
I1832
I1833
I1871
I1897
I1834
sampmd0
ctrb00
ctrb01
ctrb02
ctrb10
net344
vdd!
net344
vdd!
net344
vdd!
net344
vdd!
net344
vdd!
wdr=3.75u
ldr=1u
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wdr=3.75u
ldr=1u
"pch"
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wdr=3.75u
ldr=1u
"pch"
I434
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wdr=3.75u
ldr=1u
"pch"
I432
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wdr=3.75u
ldr=1u
"pch"
I632
3.75u/1u
wdr=3.75u
ldr=1u
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3.75u/1u
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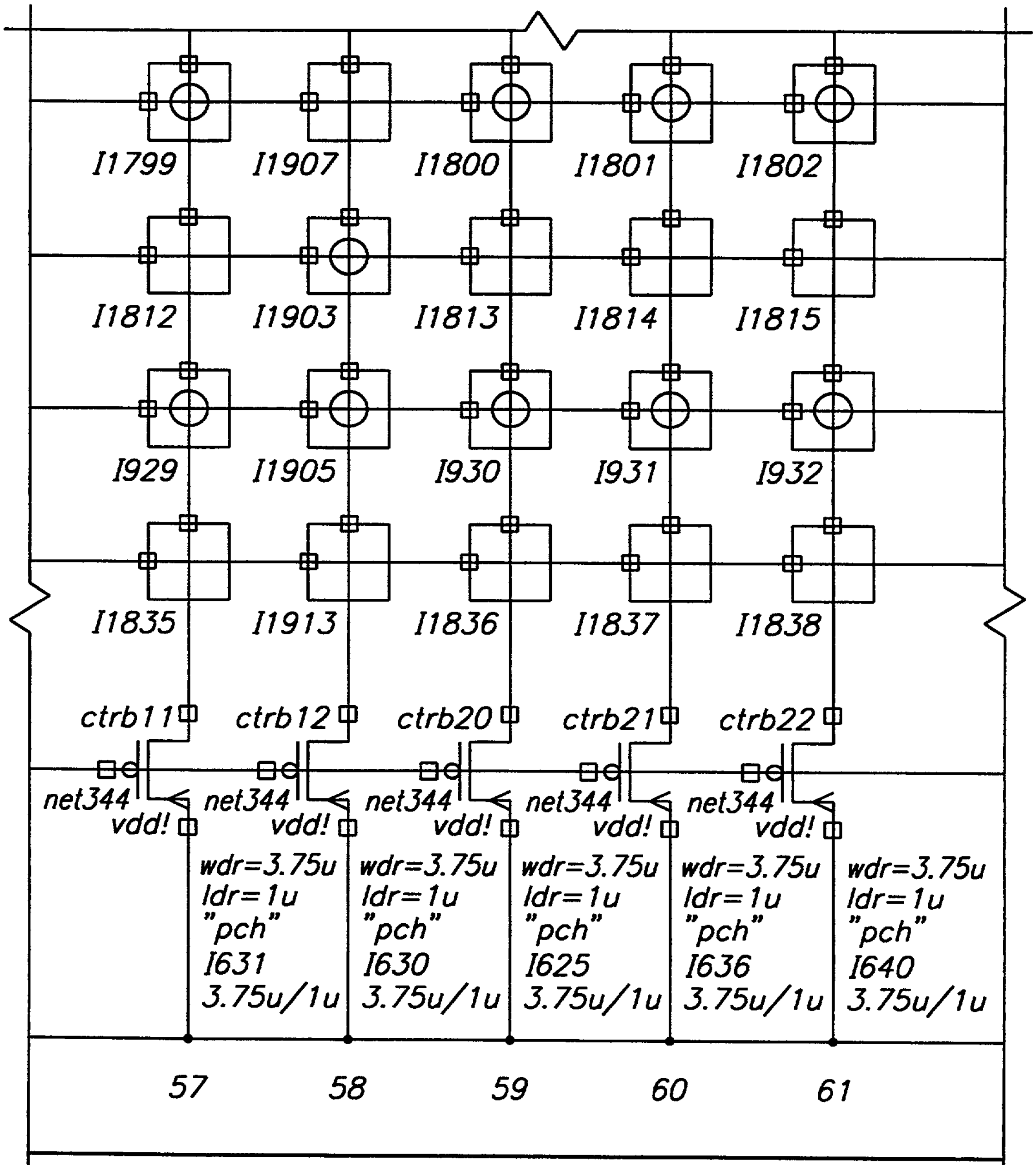
53
54
55
56

Fig 9.0103FK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I1903
I1813
I1814
I1815
I929
I1905
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I931
I932
I1835
I1913
I1836
I1837
I1838
ctrb11
ctrb12
ctrb20
ctrb21
ctrb22
net344
vdd!
net344
vdd!
net344
vdd!
net344
vdd!
net344
vdd!
wdr=3.75u
ldr=1u
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ldr=1u
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wdr=3.75u
ldr=1u
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wdr=3.75u
ldr=1u
"pch"
I636
3.75u/1u
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ldr=1u
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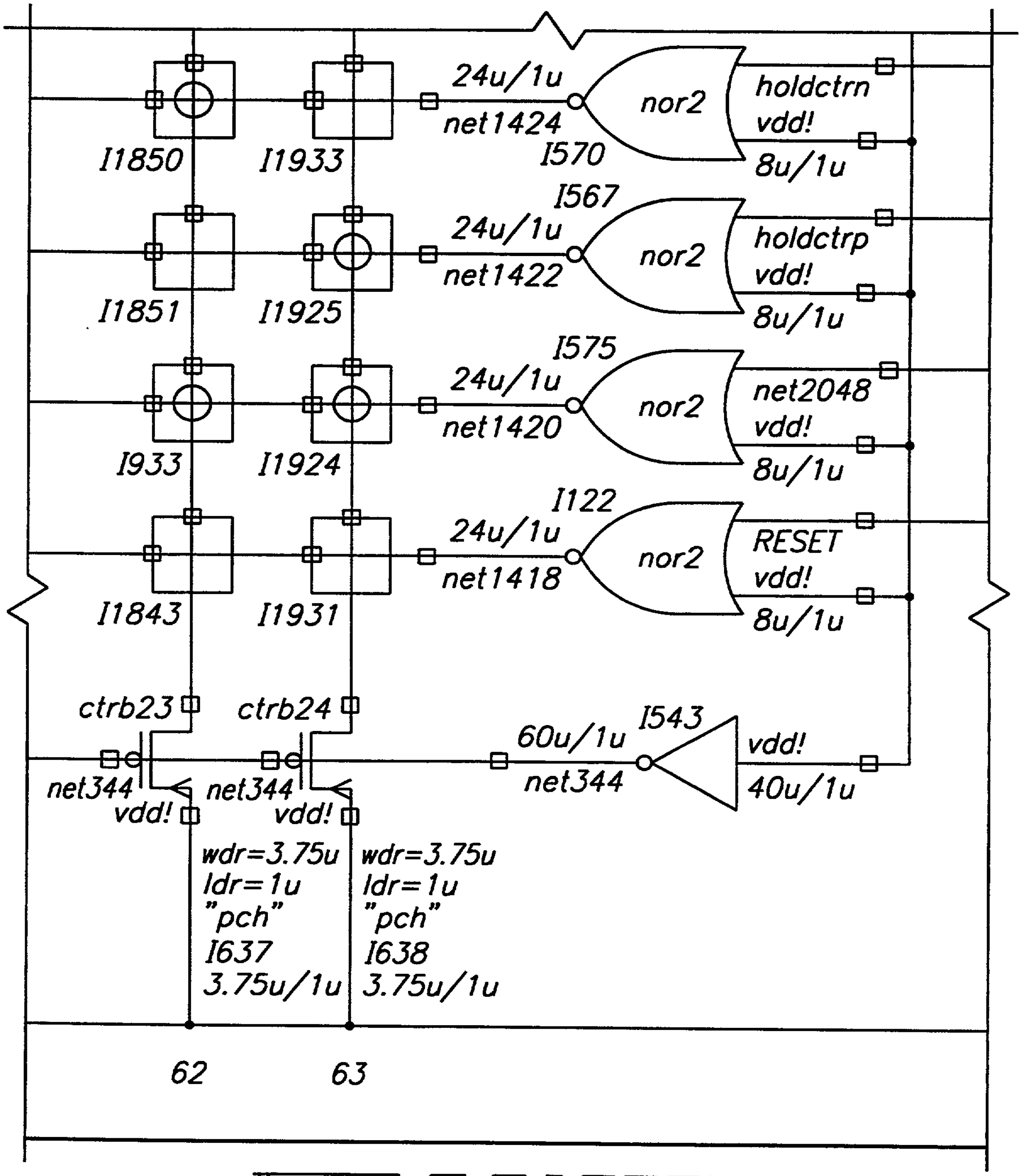
I640
3.75u/1u
57
58
59
60
61

Fig 9.01.03FL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I570
nor2
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vdd!
8u/1u
I11850
I1933
I567
24u/1u
net1422
nor2
holdctrp
vdd!
8u/1u
I1851
I1925
I575
24u/1u
net1420
nor2
net2048
vdd!
8u/1u
I933
I1924
I122
24u/1u
net1418
nor2
RESET
vdd!
8u/1u
I1843
I1931
ctrb23
ctrb24
I543
60u/1u
net344
vdd!
40u/1u
net344
vdd!
net344
vdd!
wdr=3.75u
ldr=1u
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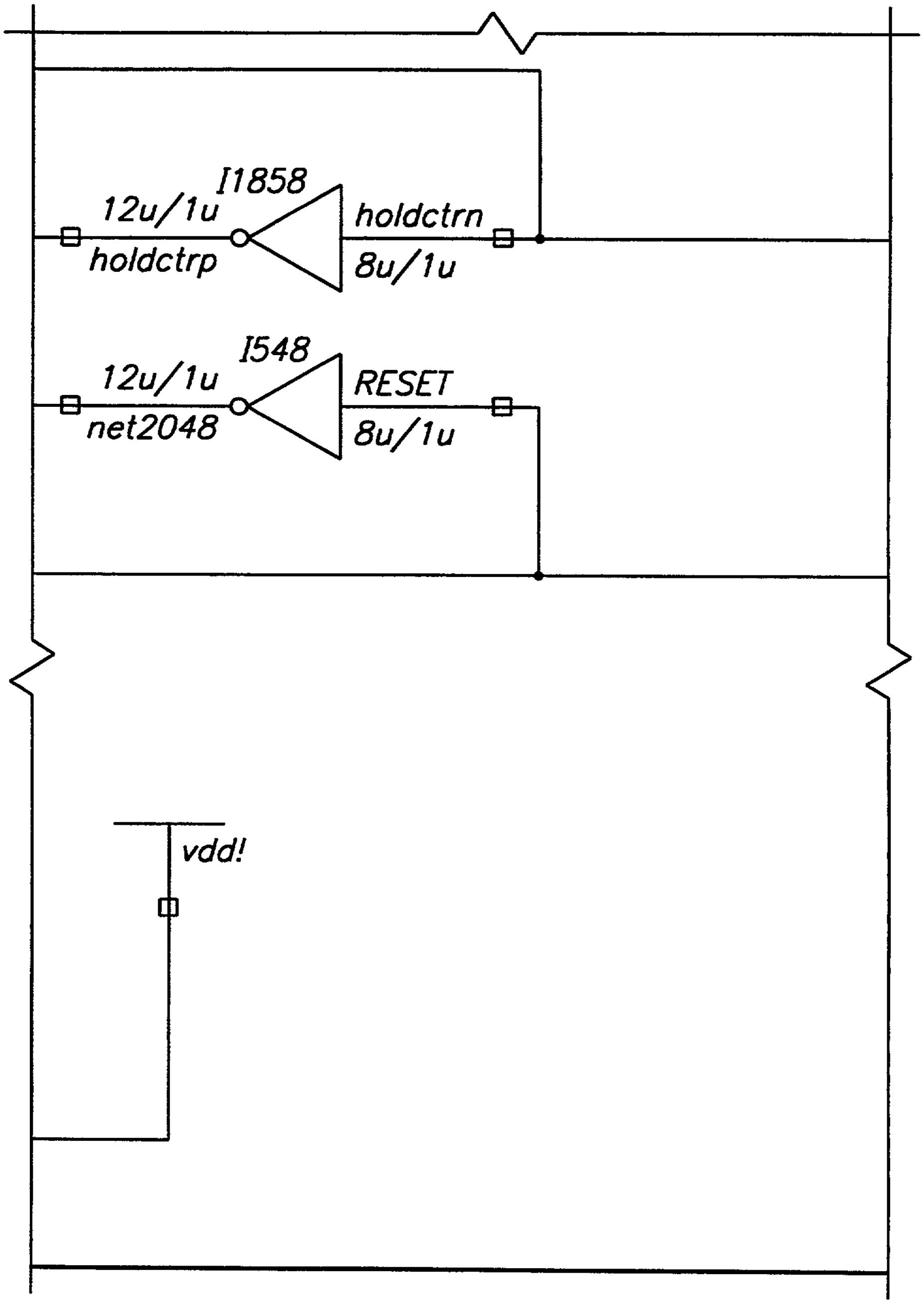
wdr=3.75u
ldr=1u
"pch"
I638
3.75u/1u
62
63

Fig 9.0103FM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holdctrn
8u/1u
I548
12u/1u
net2048
RESET
8u/1u
vdd!

Fig 9.0103FN

2367/3273

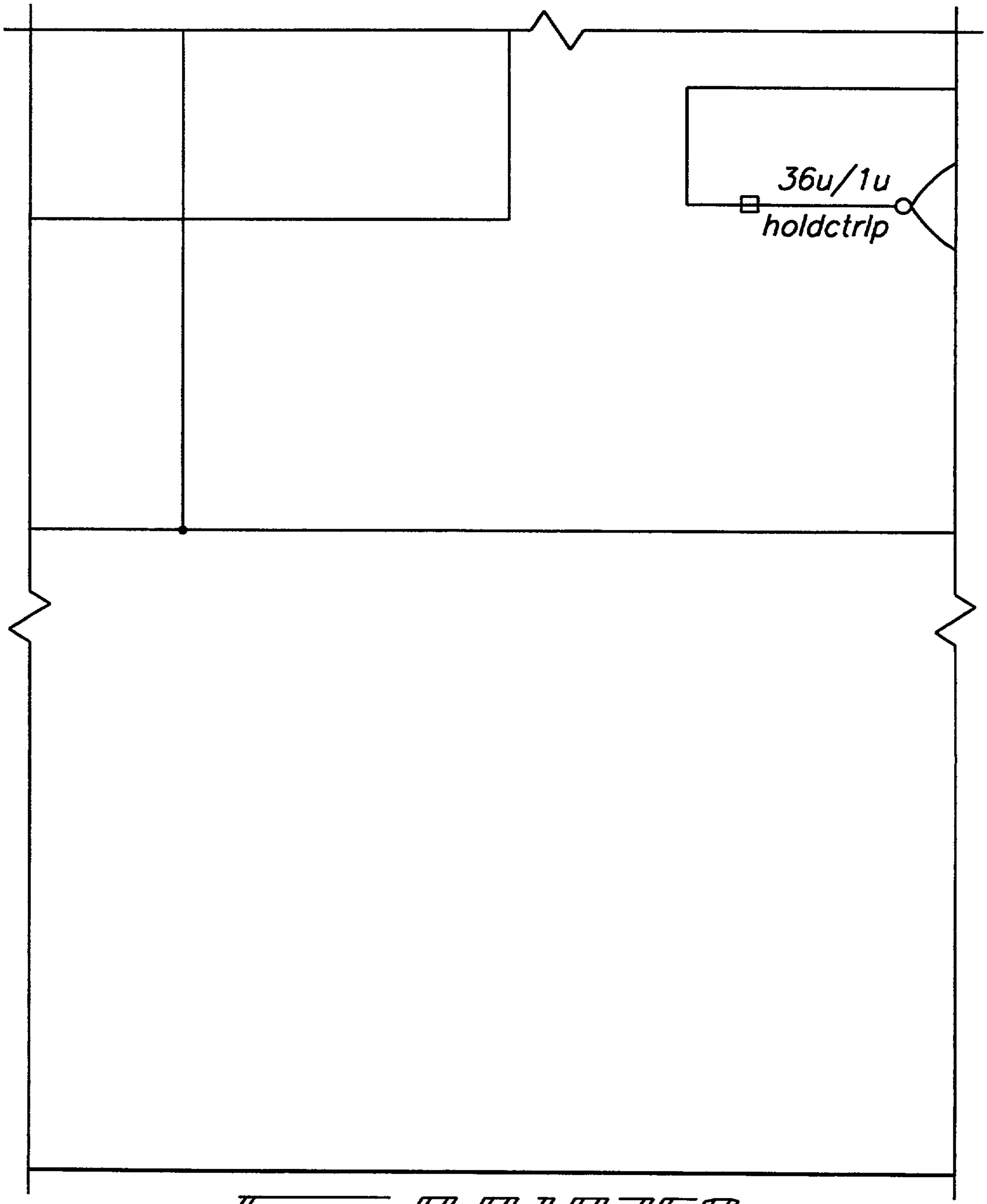

Fig 9.0103FO

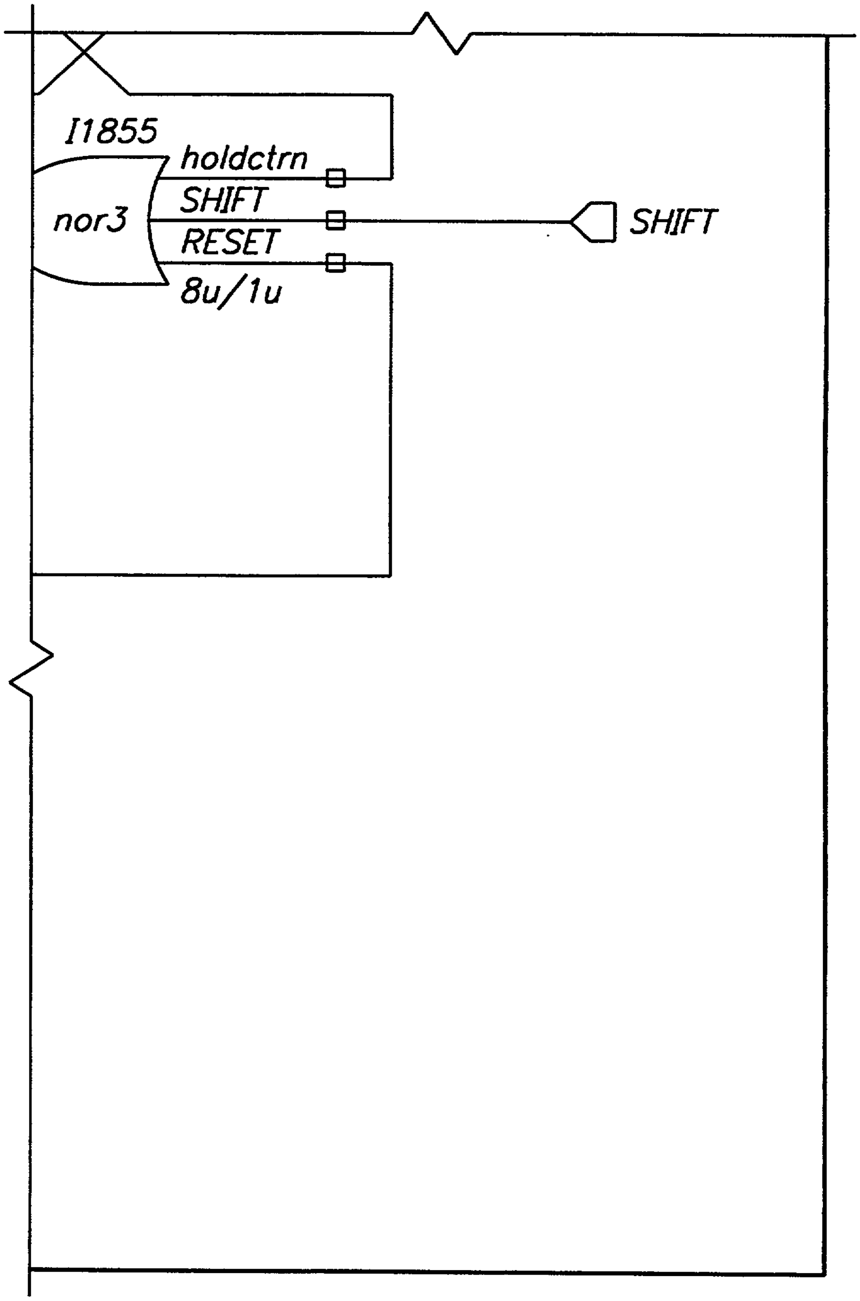

Fig 9.0103FP

9.010301AA	9.010301AB	9.010301AC
9.010301BA	9.010301BB	9.010301BC
9.010301CA	9.010301CB	9.010301CC

Fig 9.010301

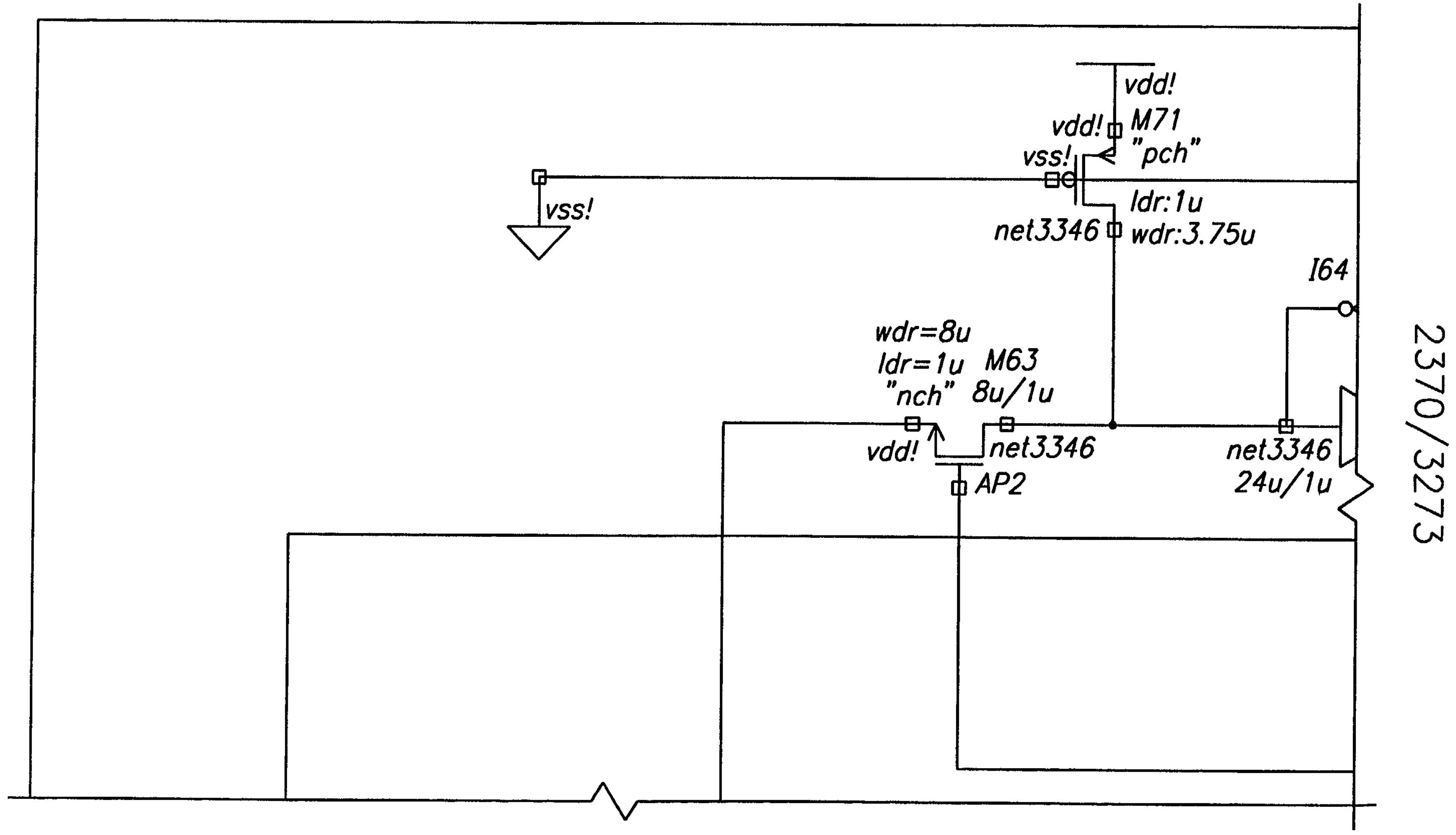

Fig 9.010301AA

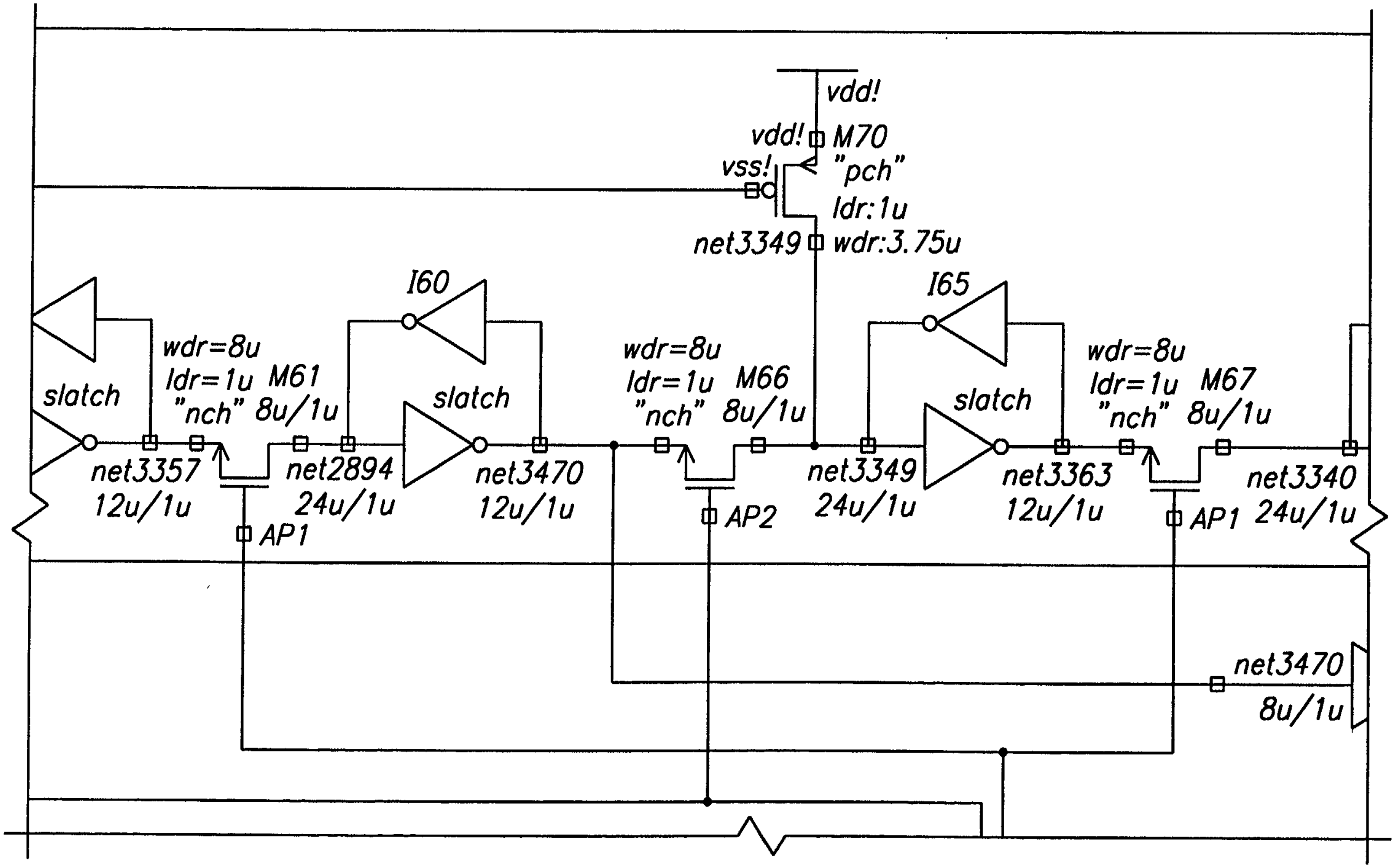

FIG. 9.010301AB

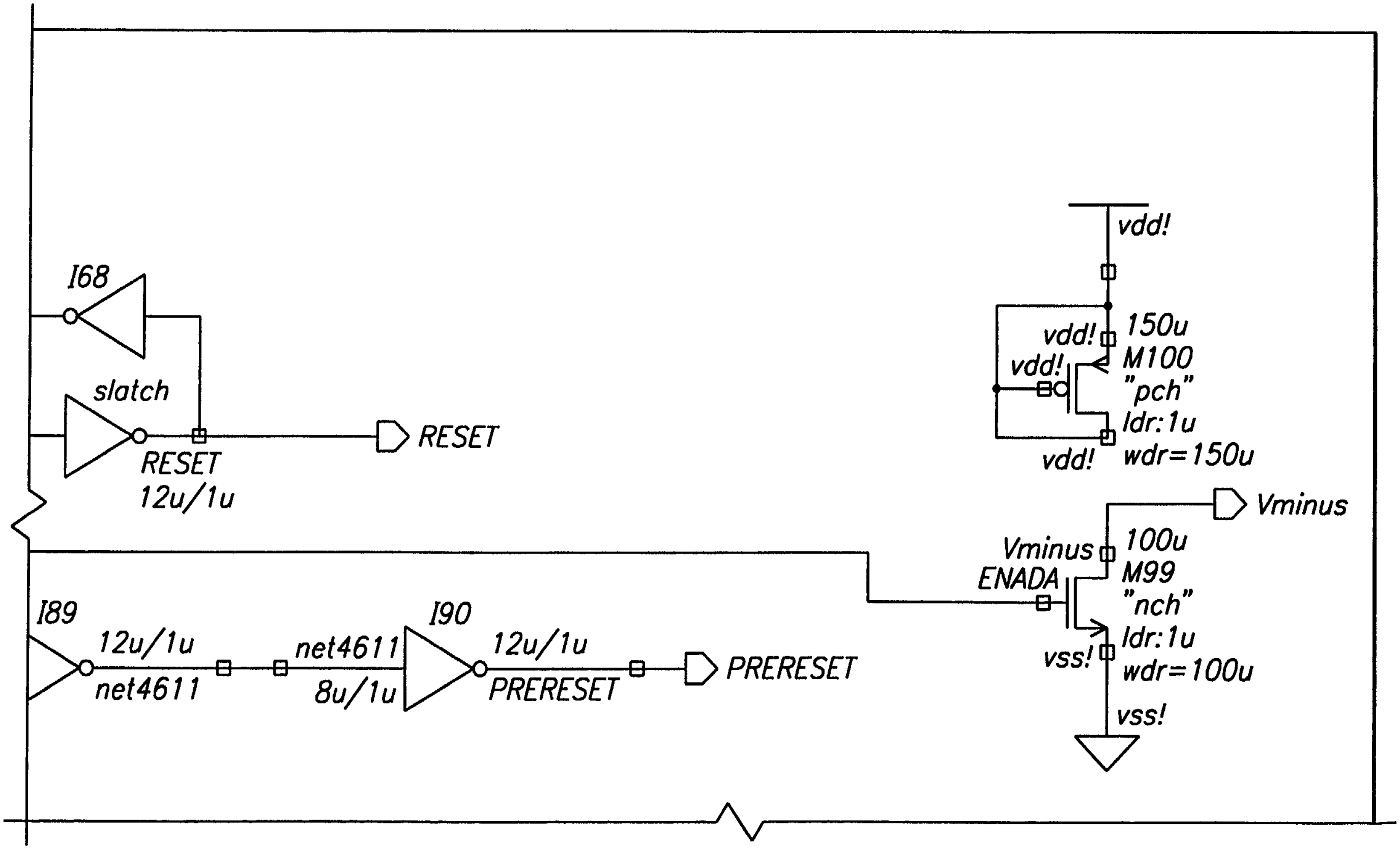

FIG 9.010301AC

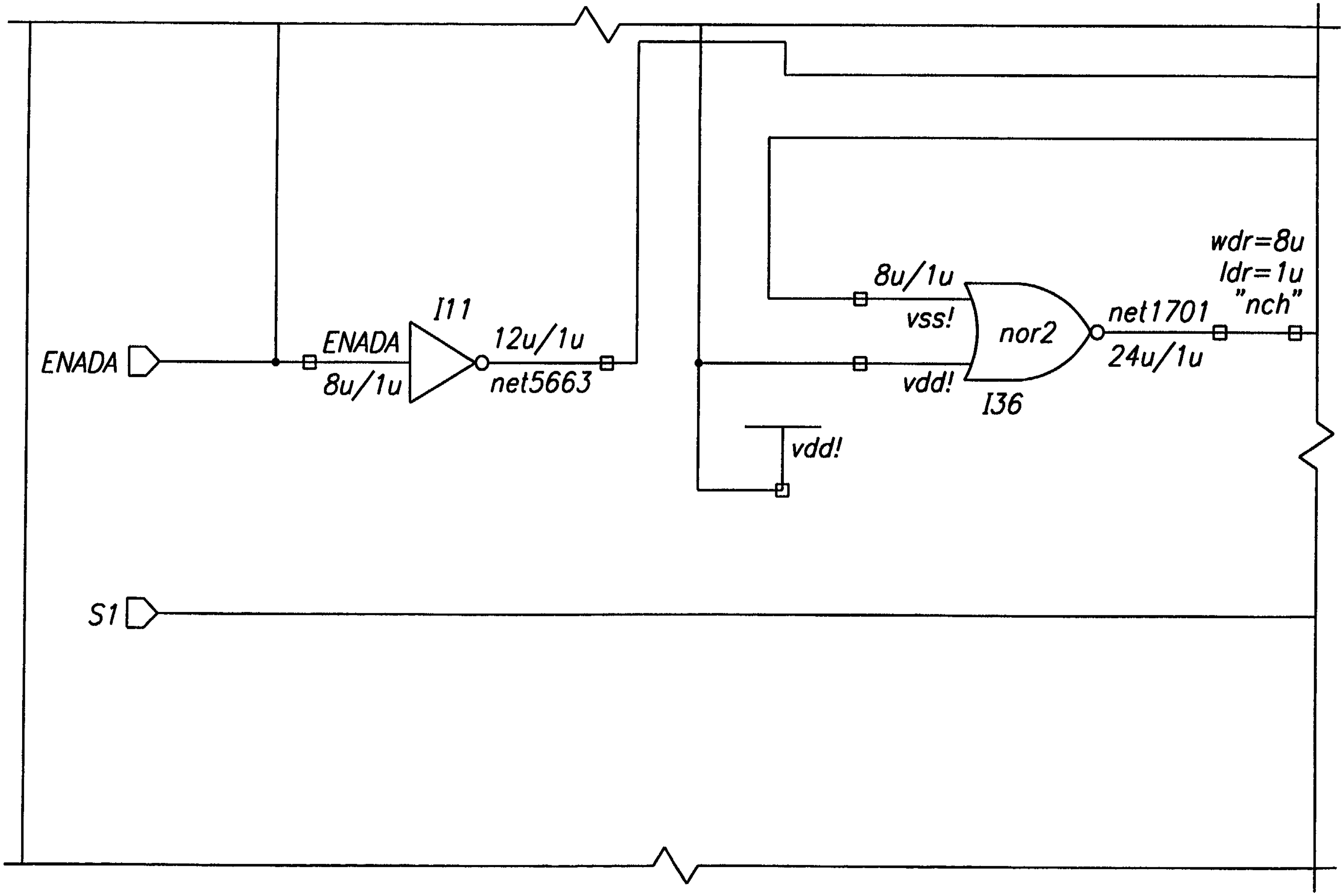

FIG 9.010301BA

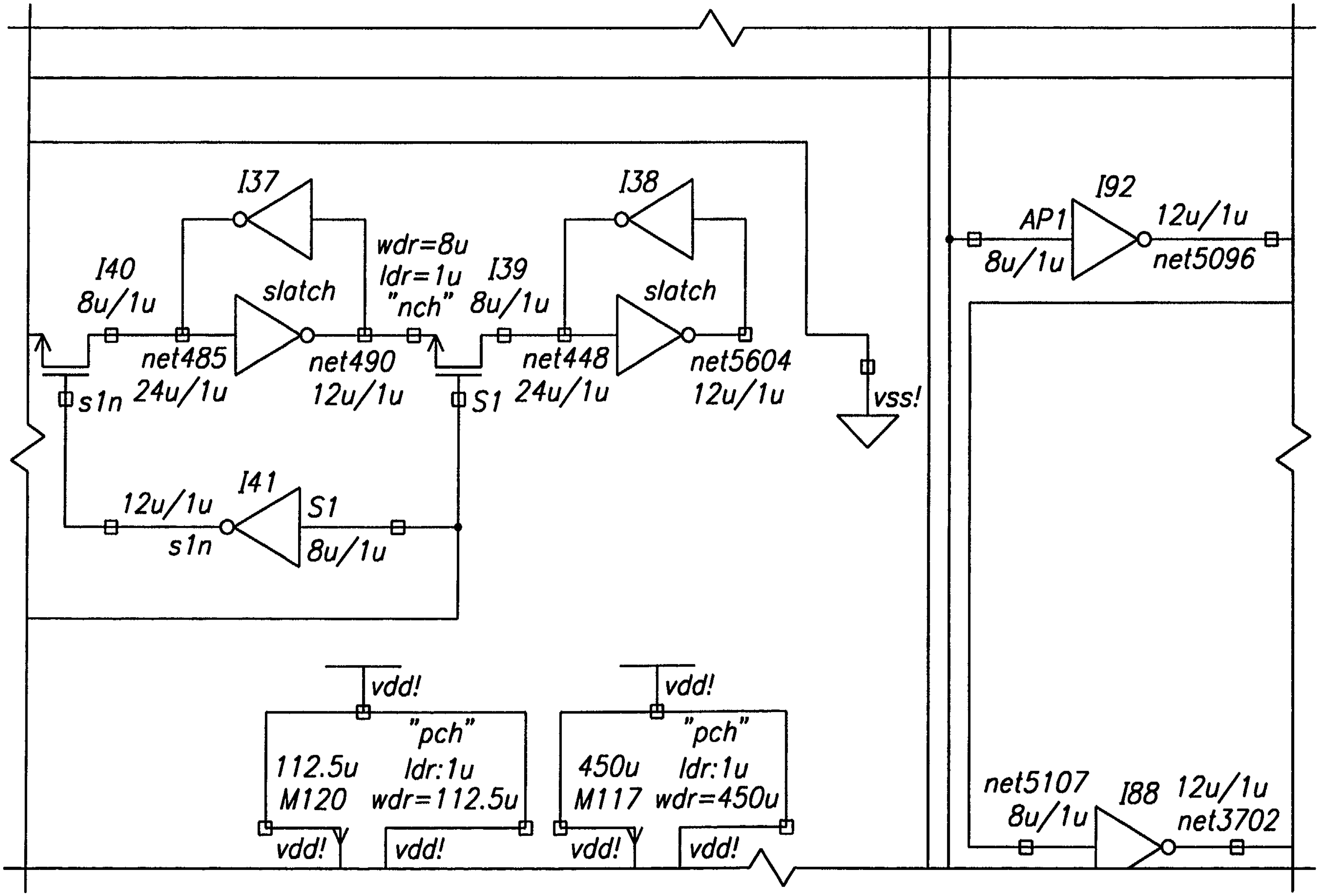

Fig 9.010301BB

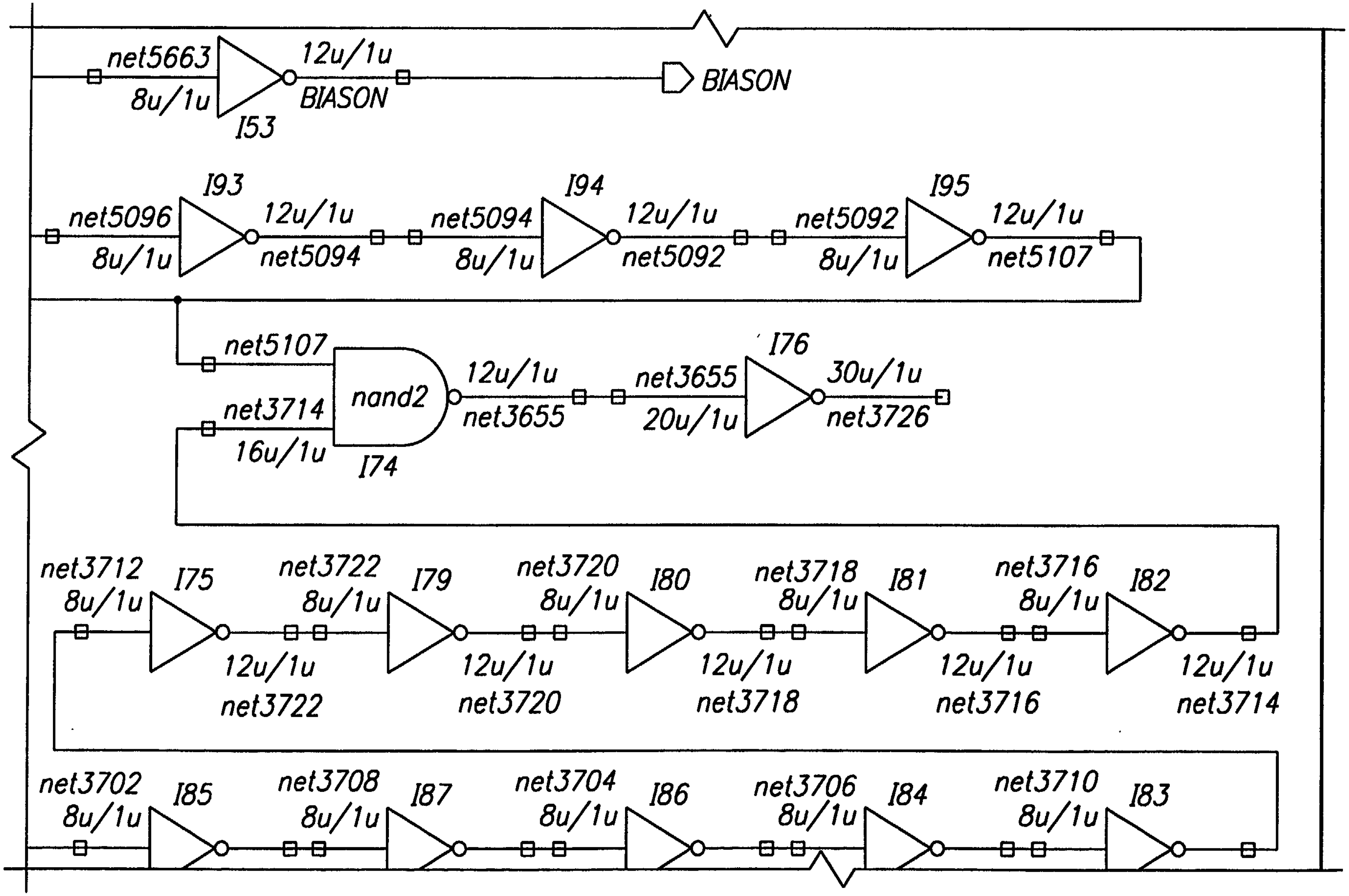

FIG 9.010301BC

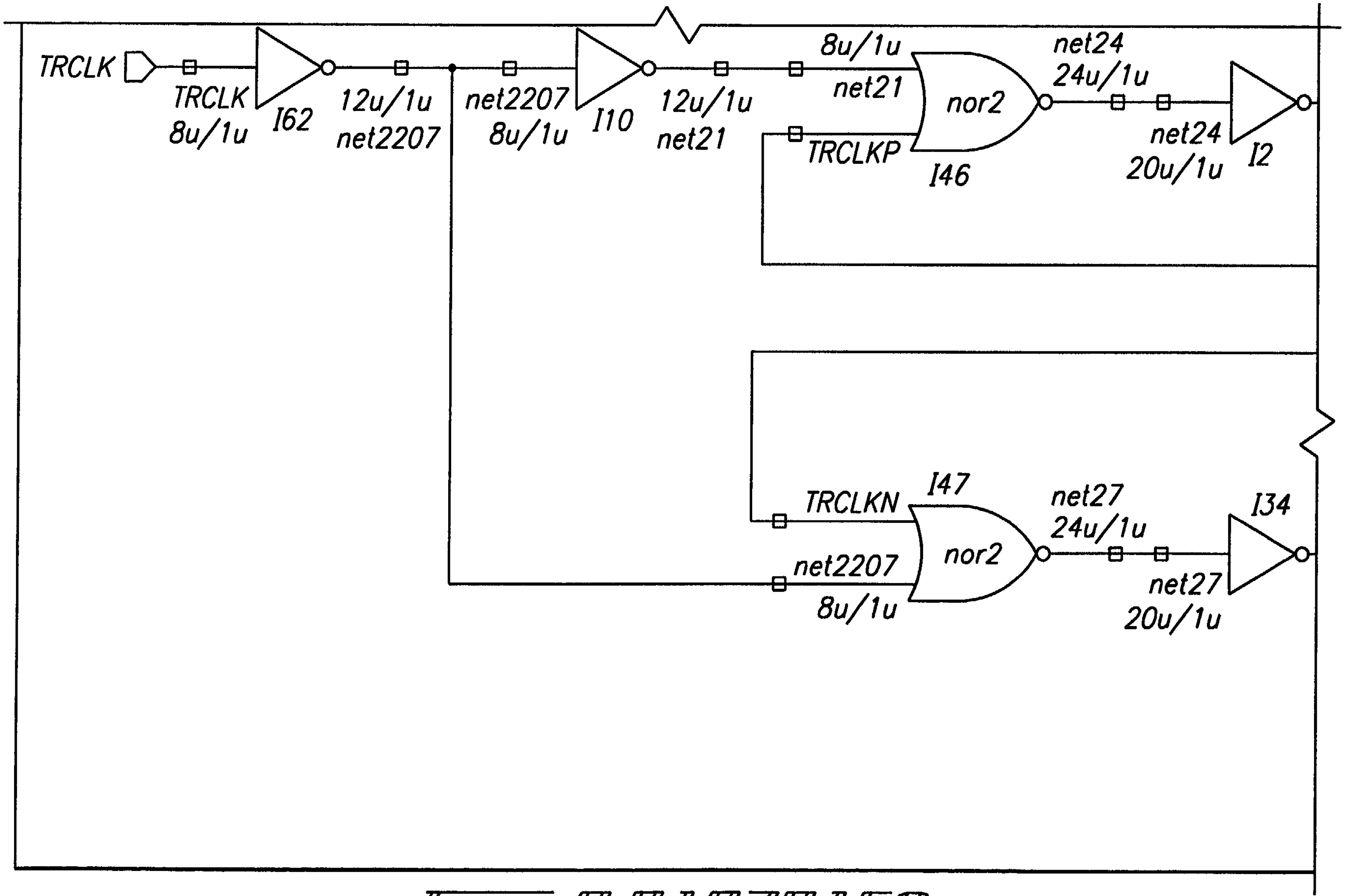

Fig 9.010301CA

09822903.061101

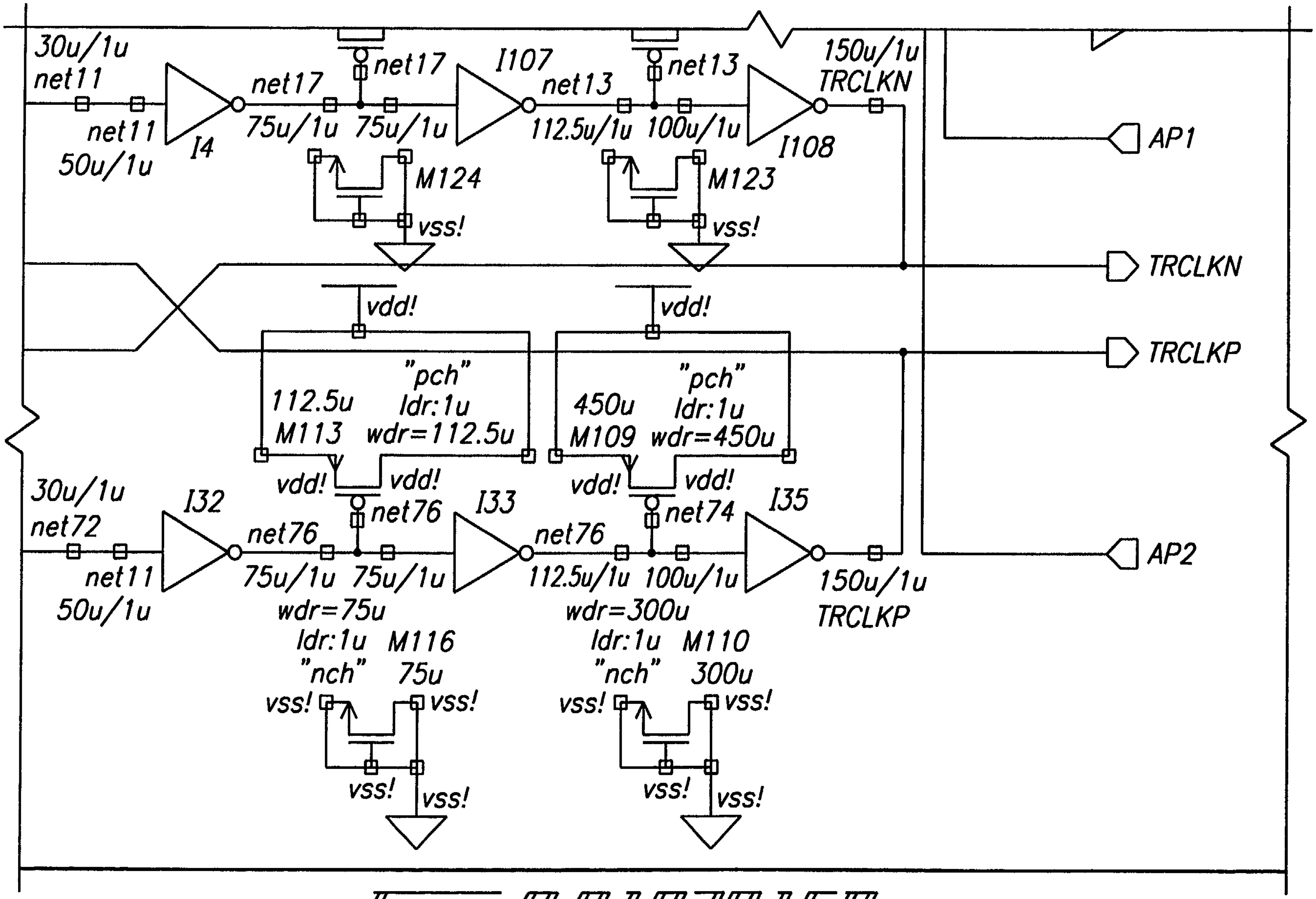

Fig 9.010301CB

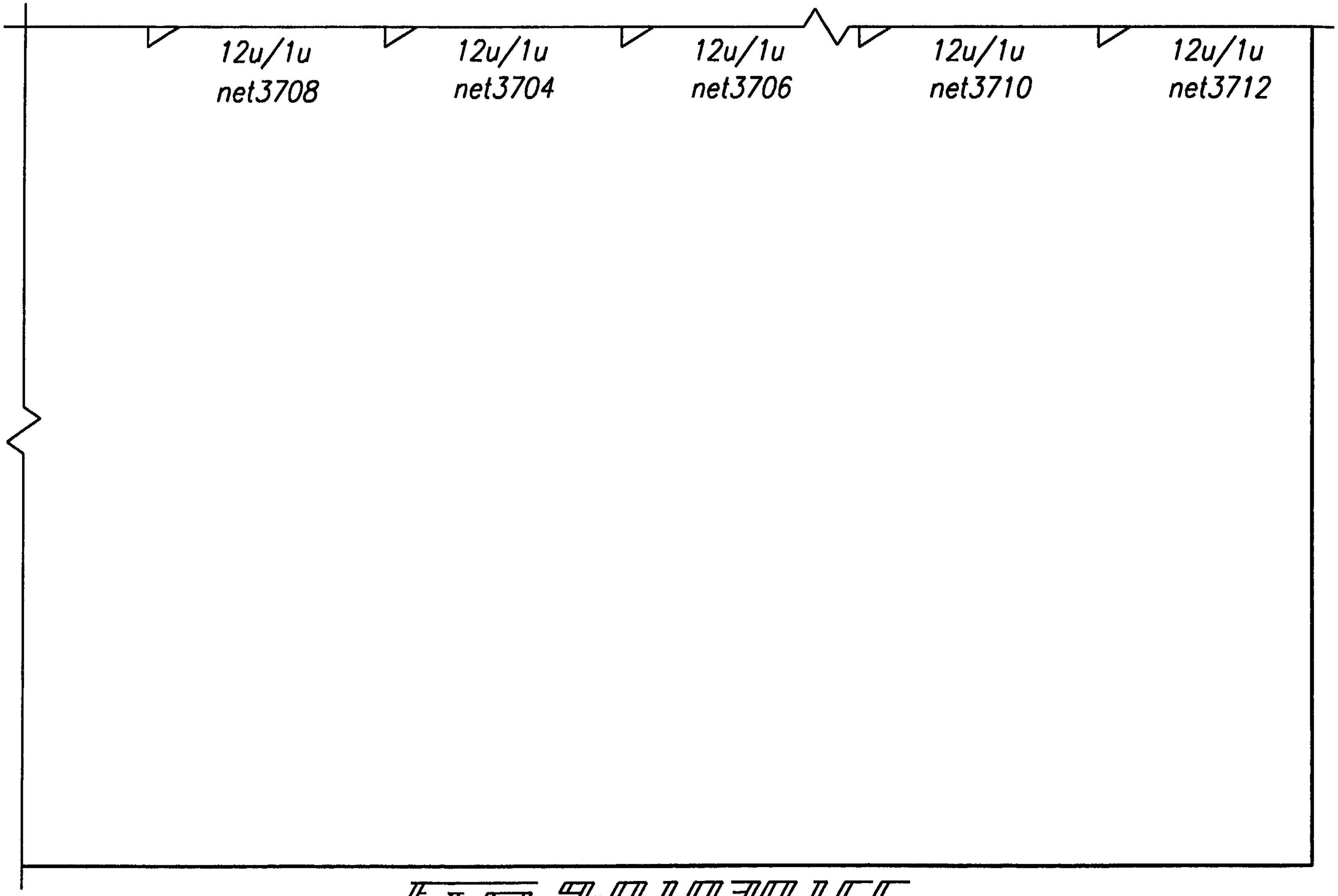

Fig. 9.010301CC

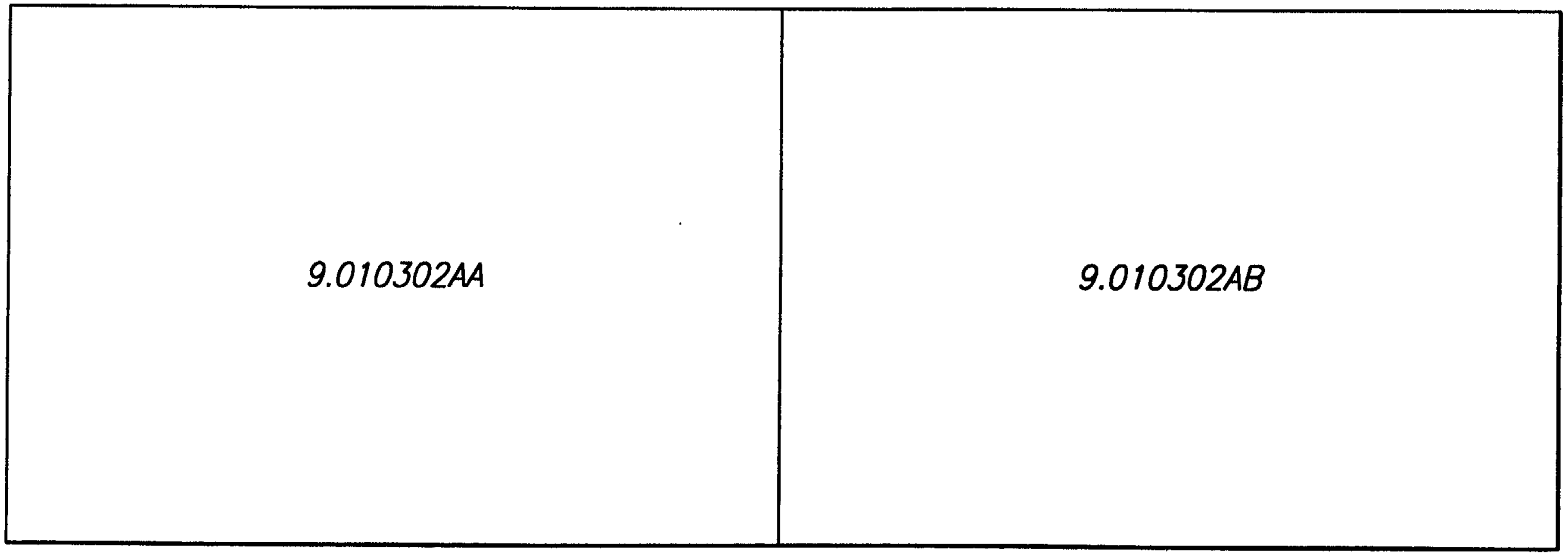

Fig. 9.010302

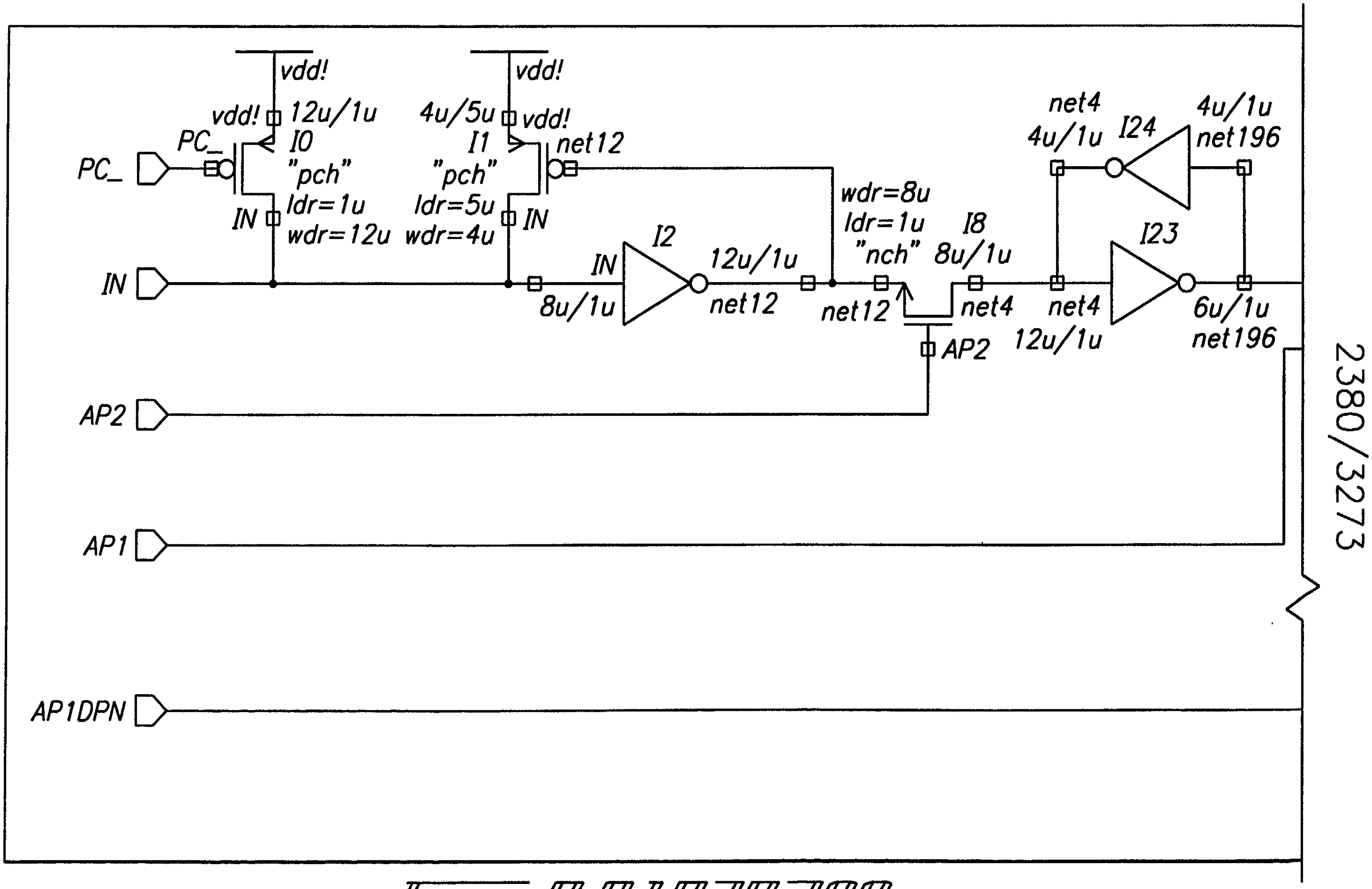

Fig 9.010302AA

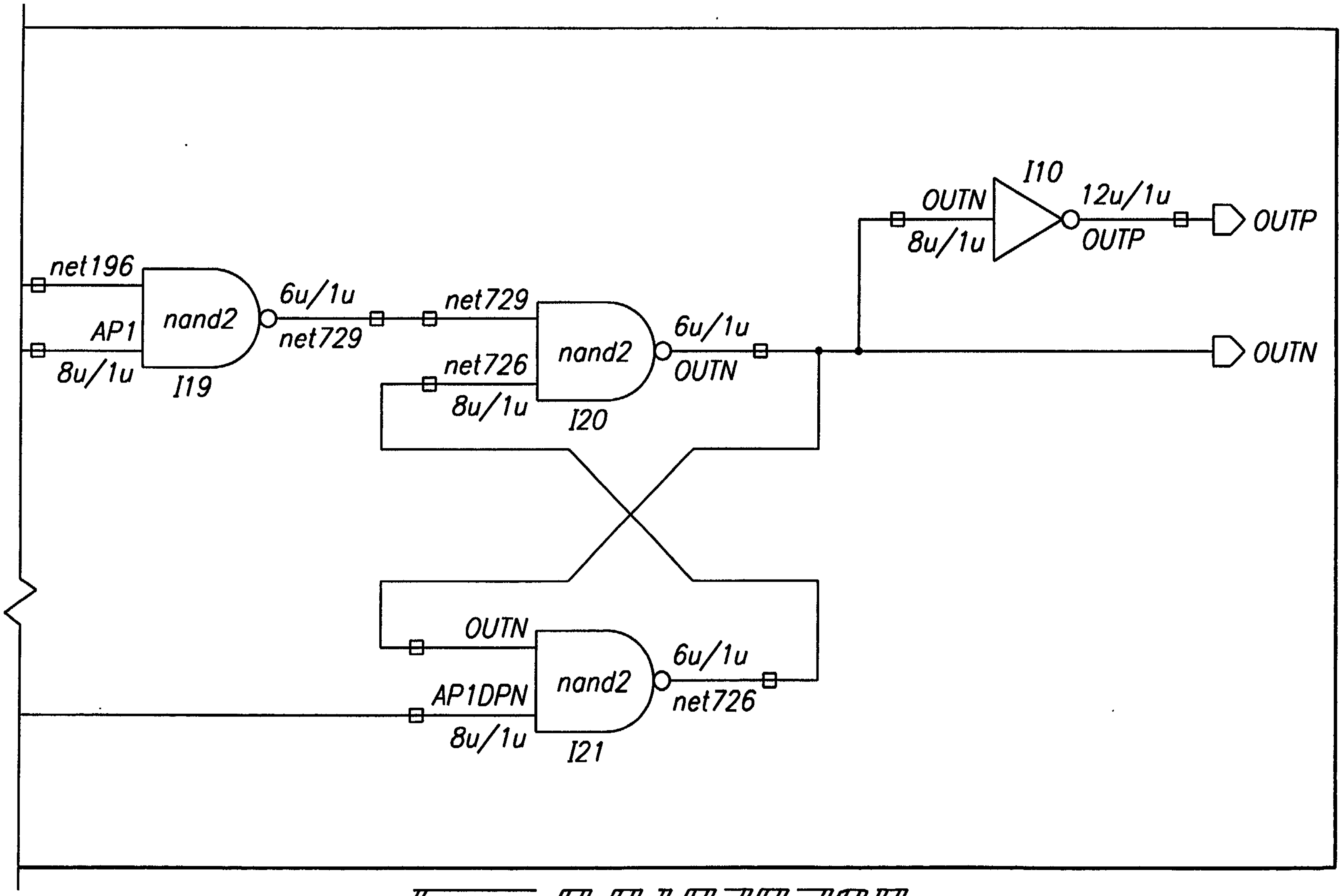

Fig 9.010302AB

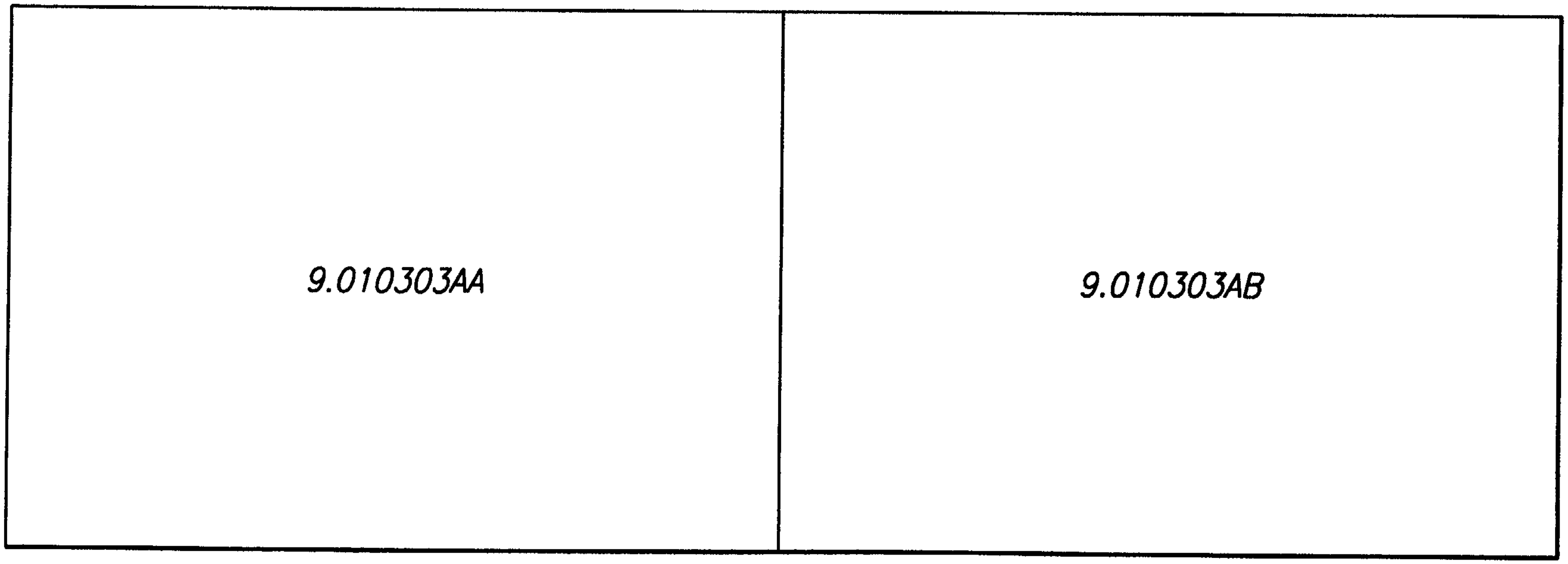

FIG. 9.010303

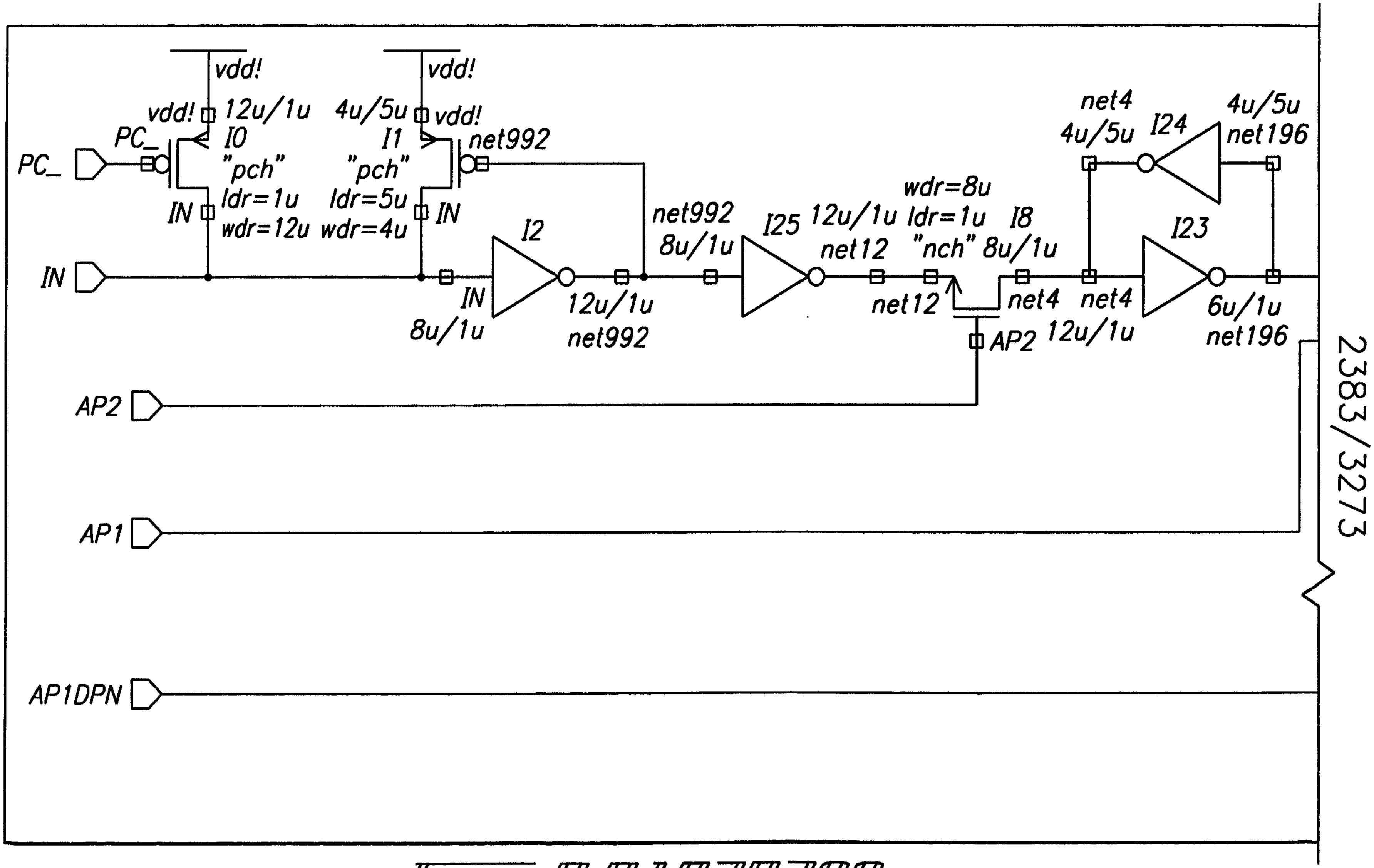

Fig 9.010303AA

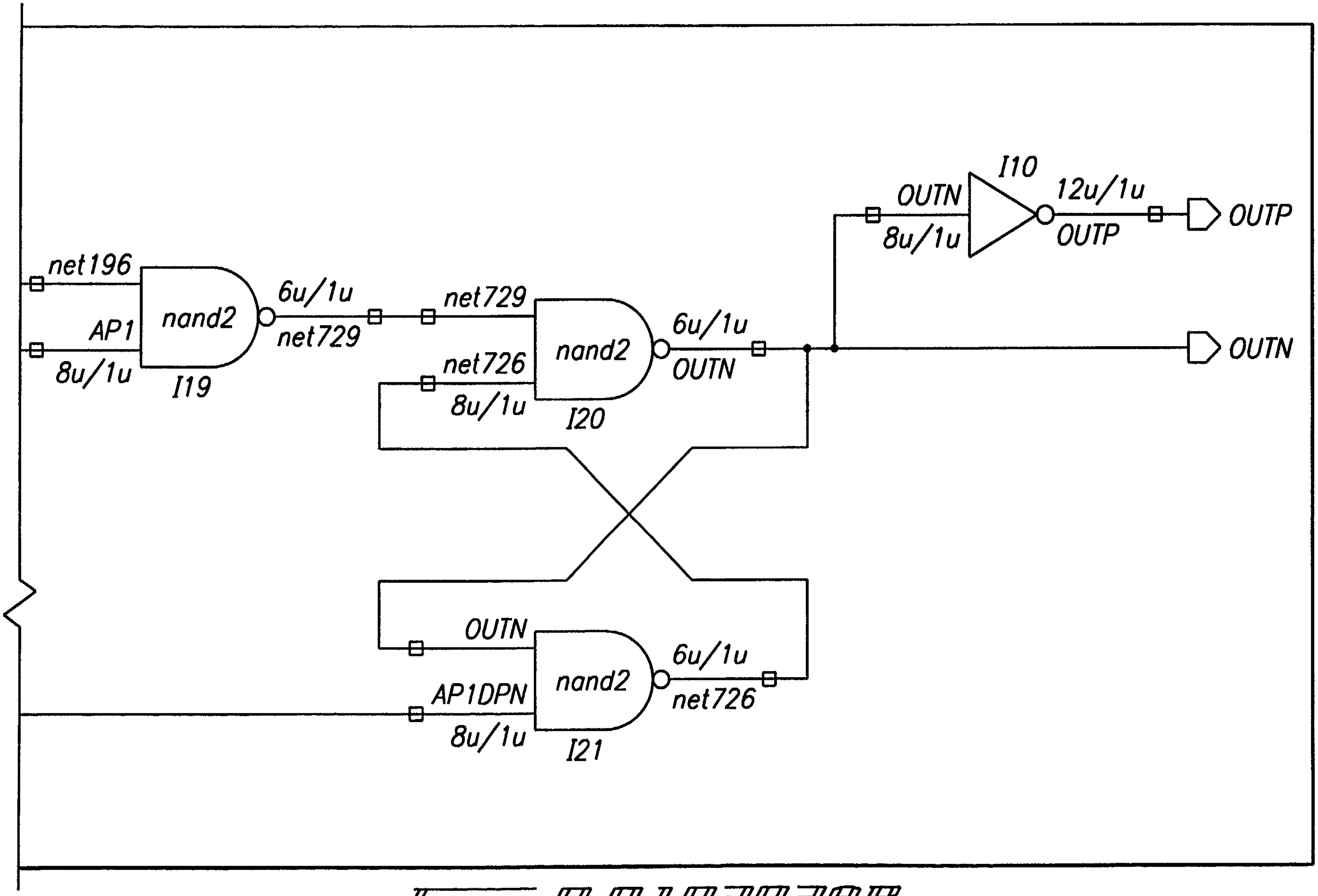

Fig 9.010303AB

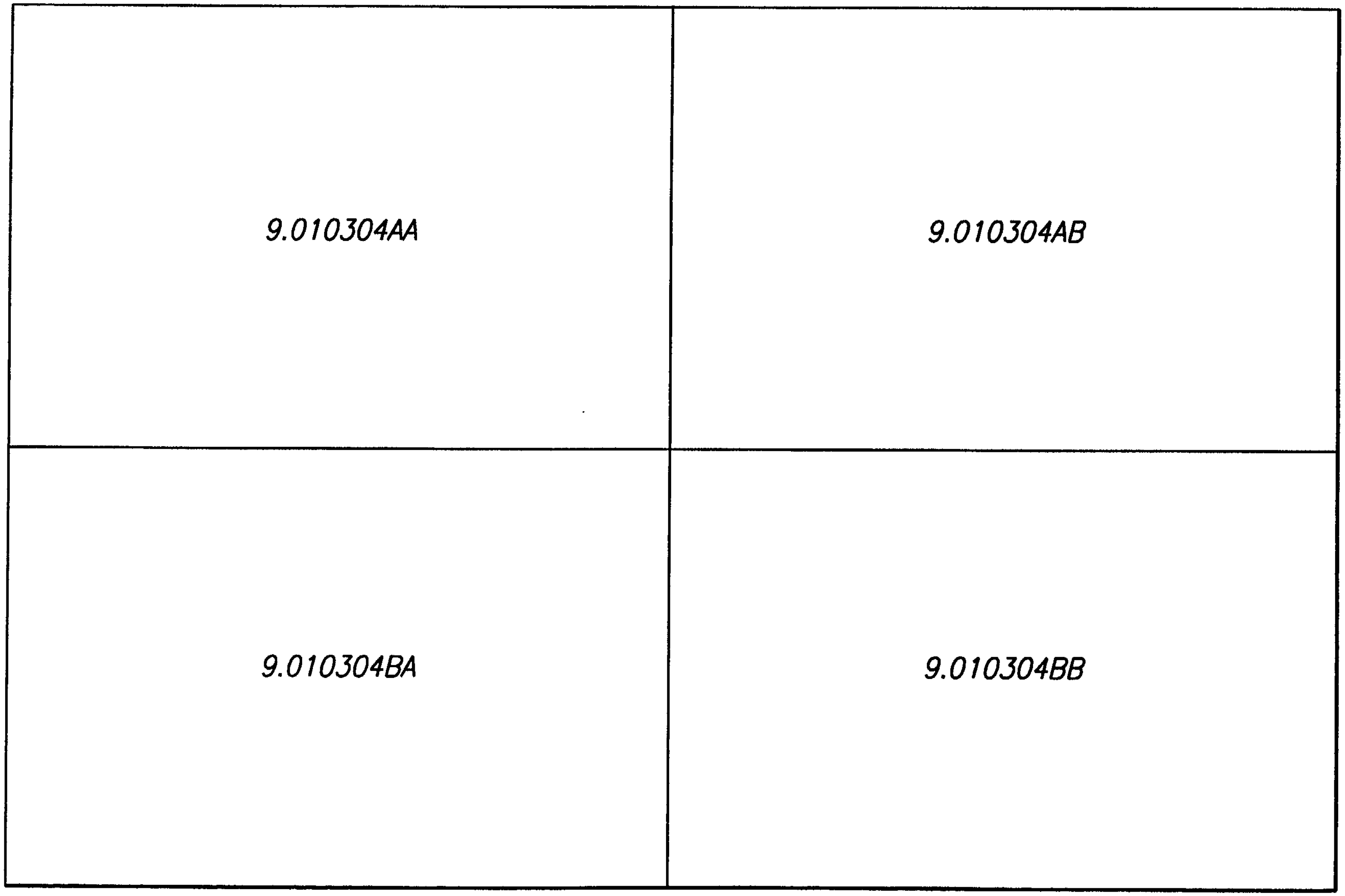

FIG 9.010304

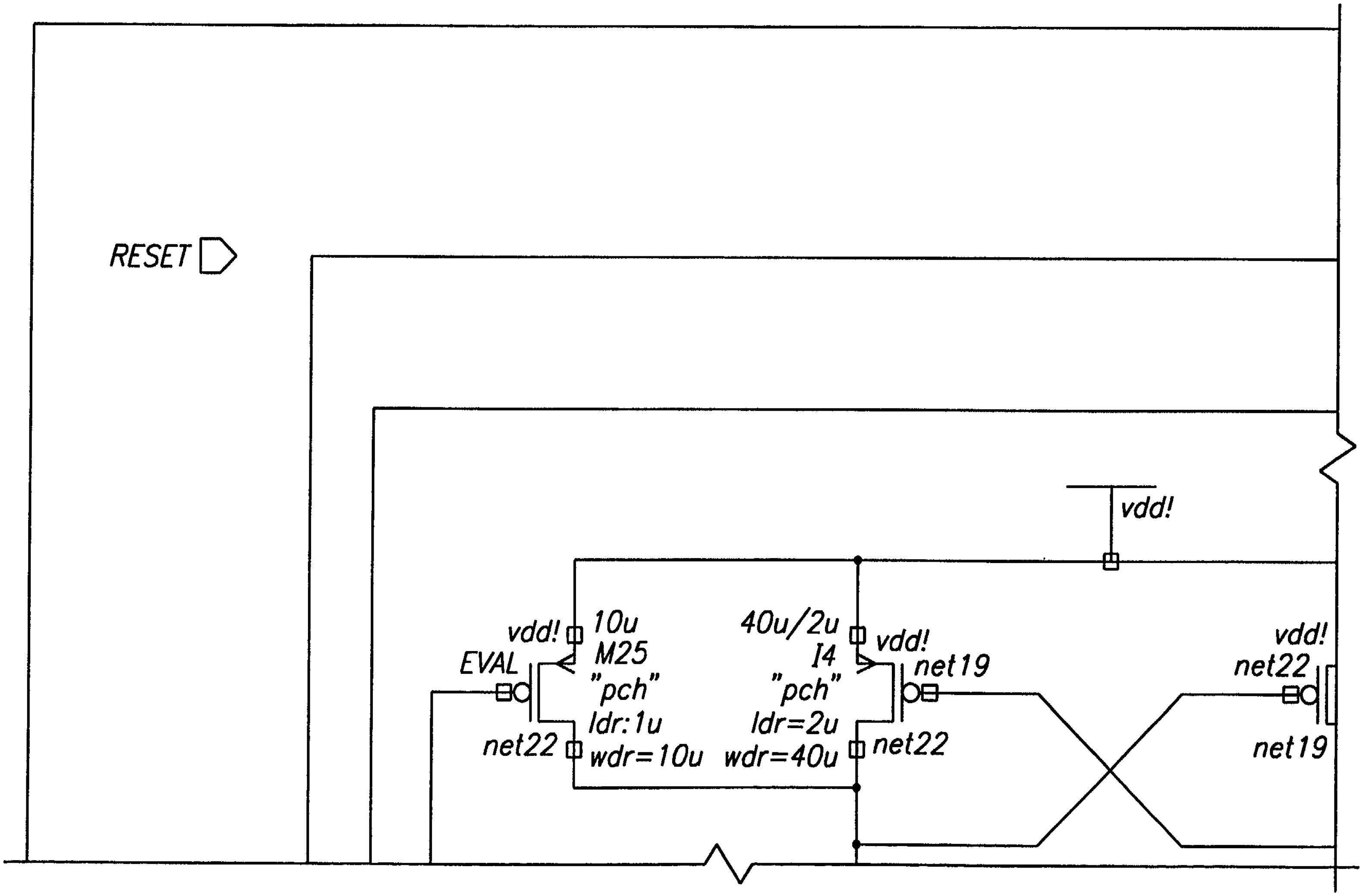

Fig 9.010304AA

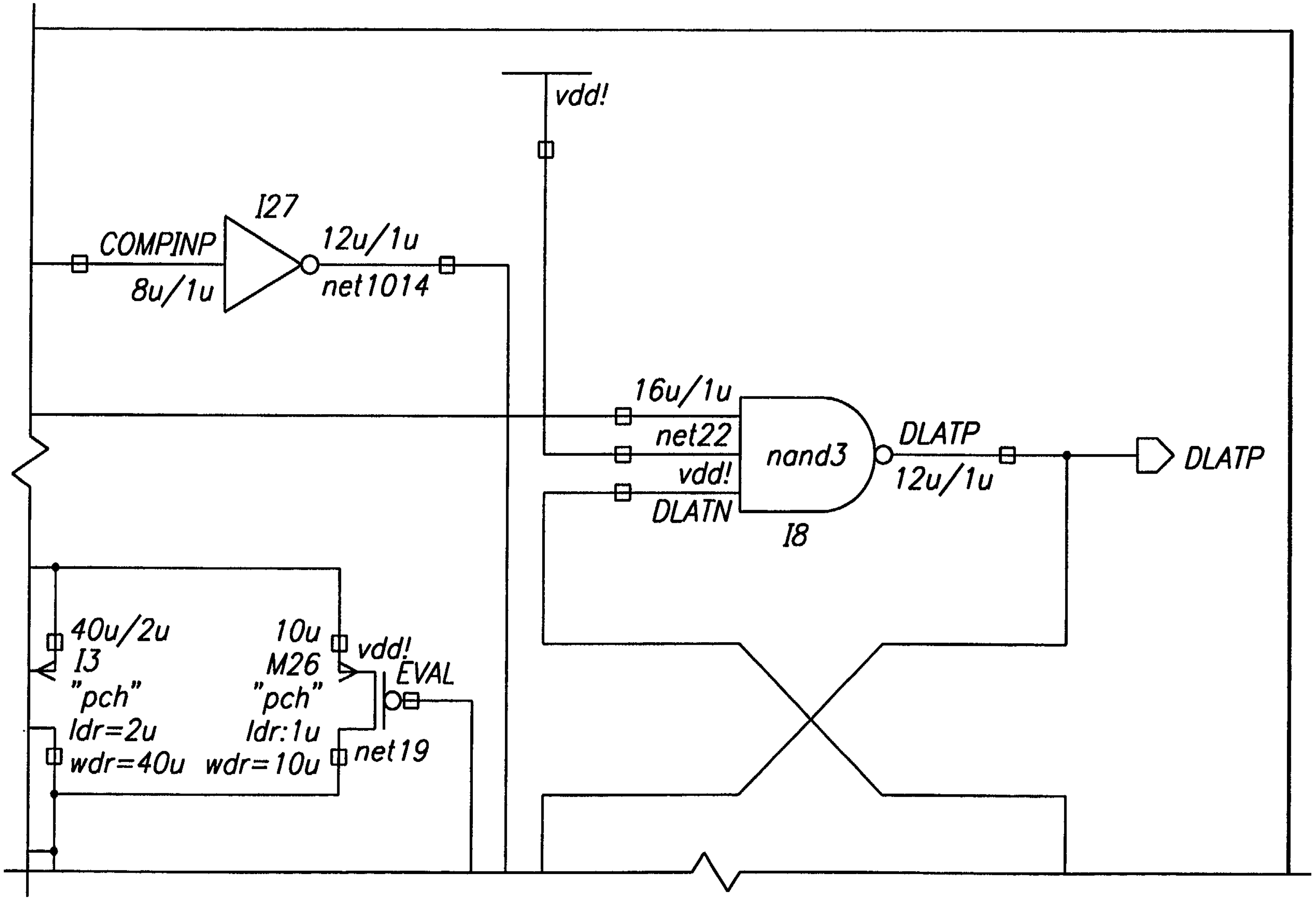

Fig 9.010304AB

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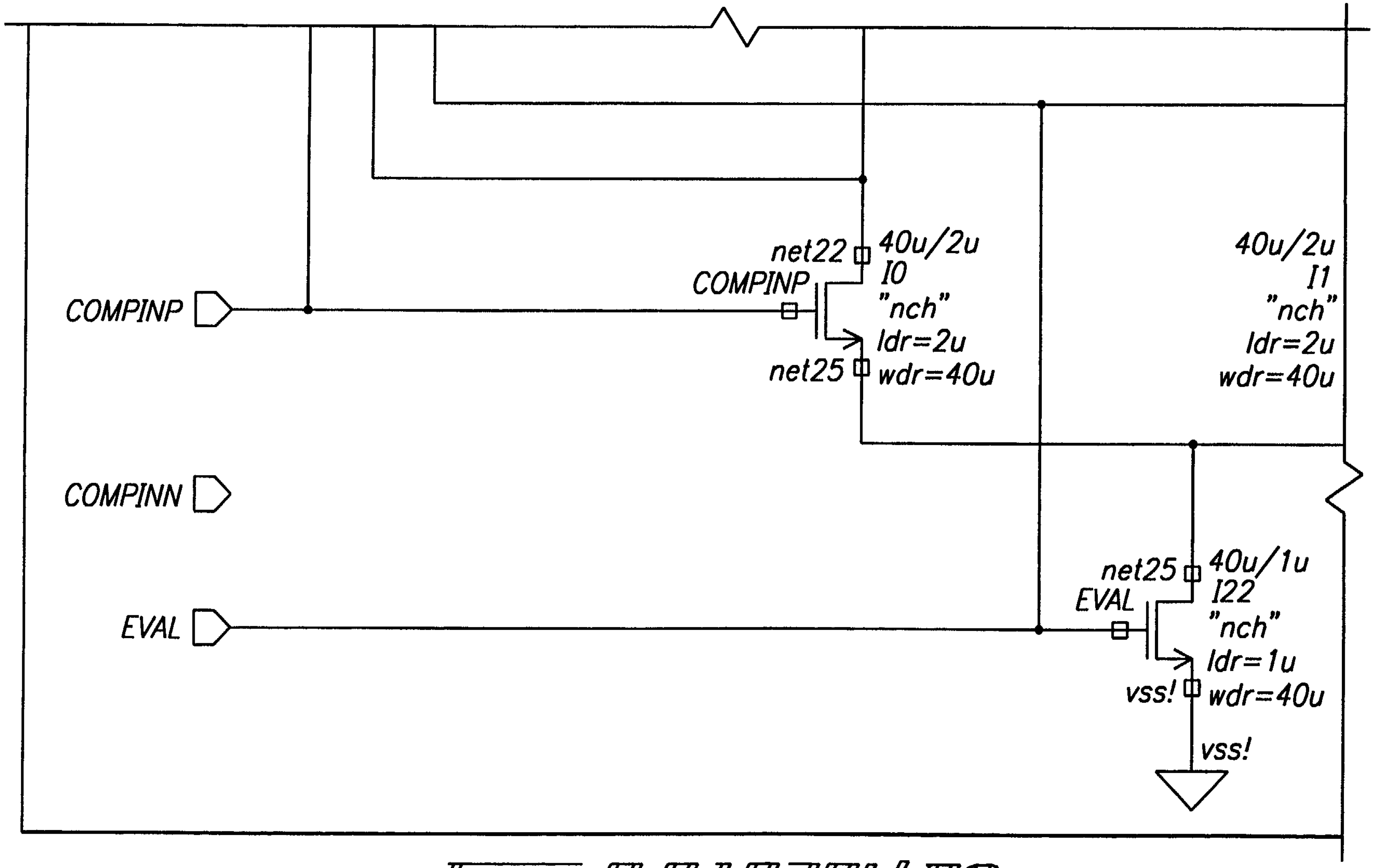


Fig 9.010304BA

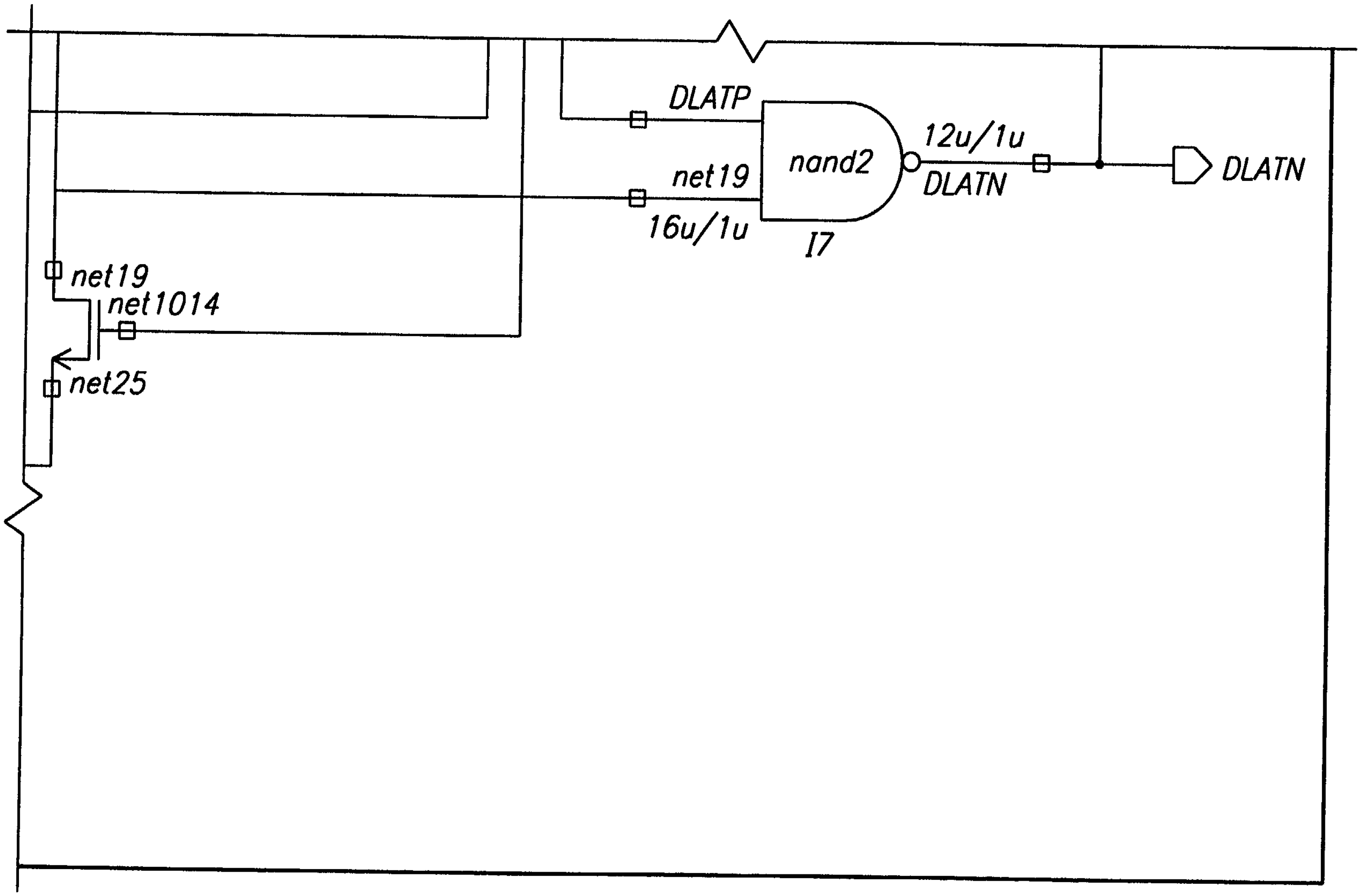


Fig 9.010304BB

9.0104AA	9.0104AB	9.0104AC	9.0104AD	9.0104AE
9.0104BA	9.0104BB	9.0104BC	9.0104BD	9.0104BE
9.0104CA	9.0104CB	9.0104CC	9.0104CD	
9.0104DA	9.0104DB	9.0104DC	9.0104DD	

Fig 9.0104

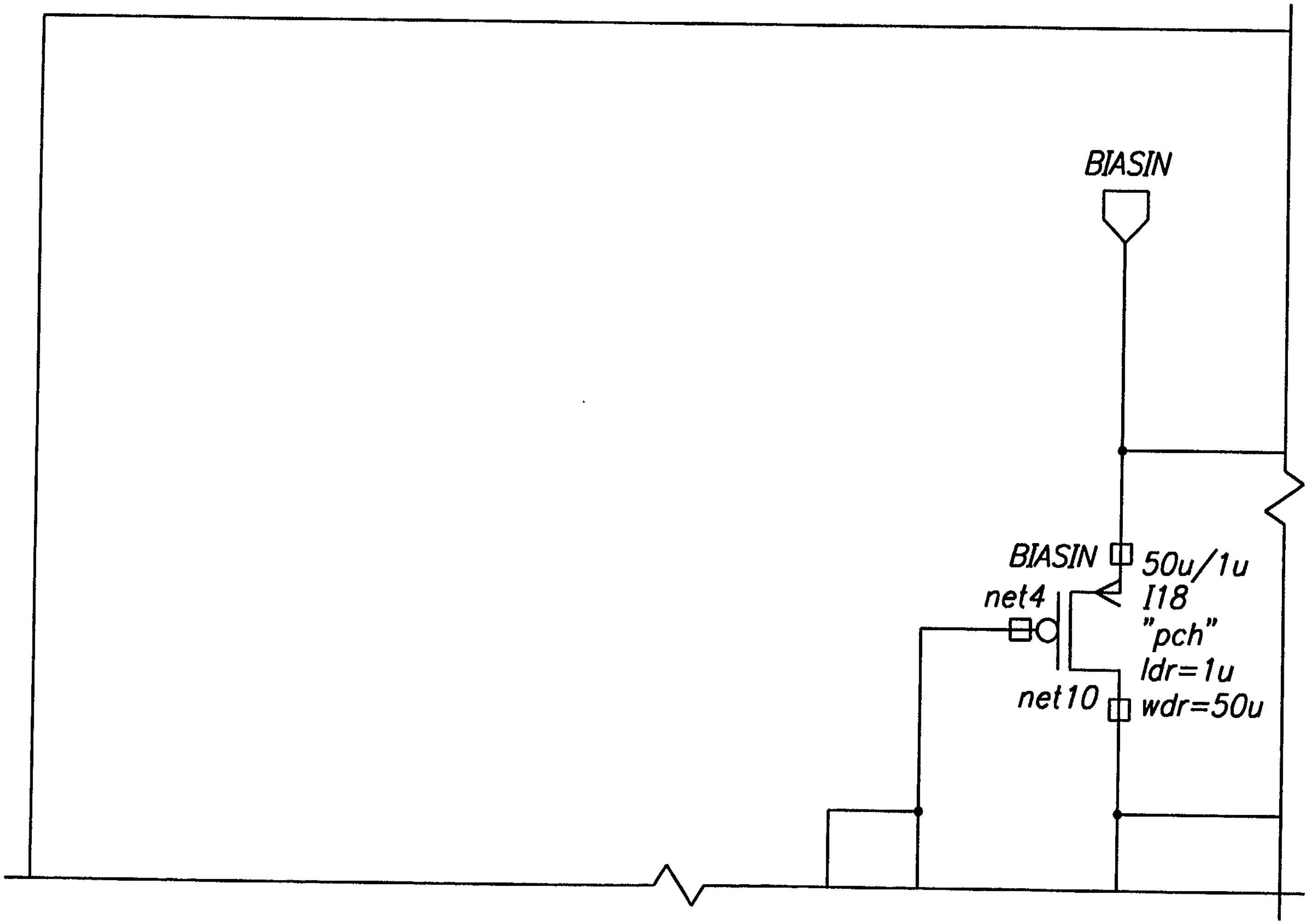


FIG. 9.0104AA

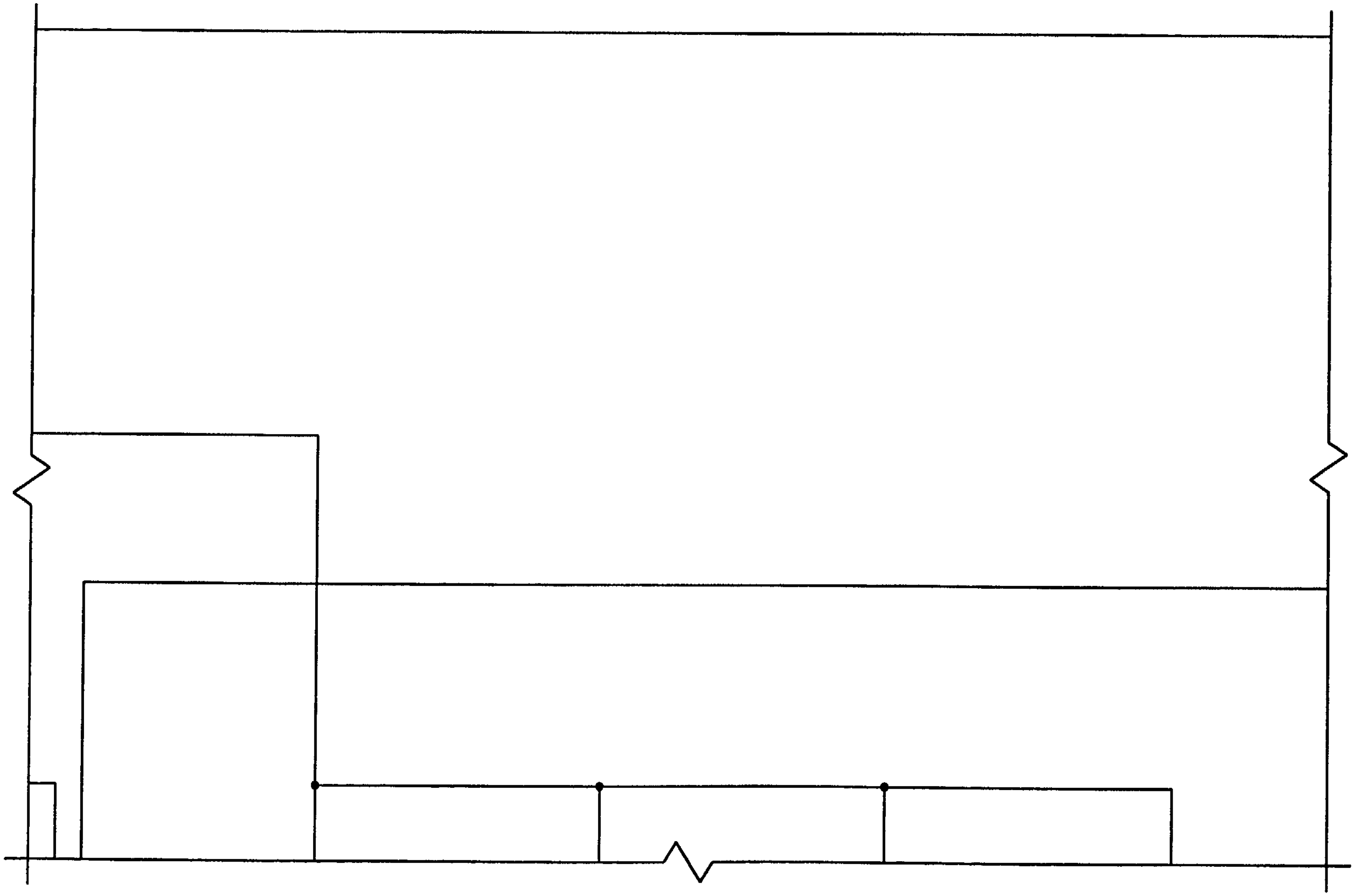


FIG 9.0104AB

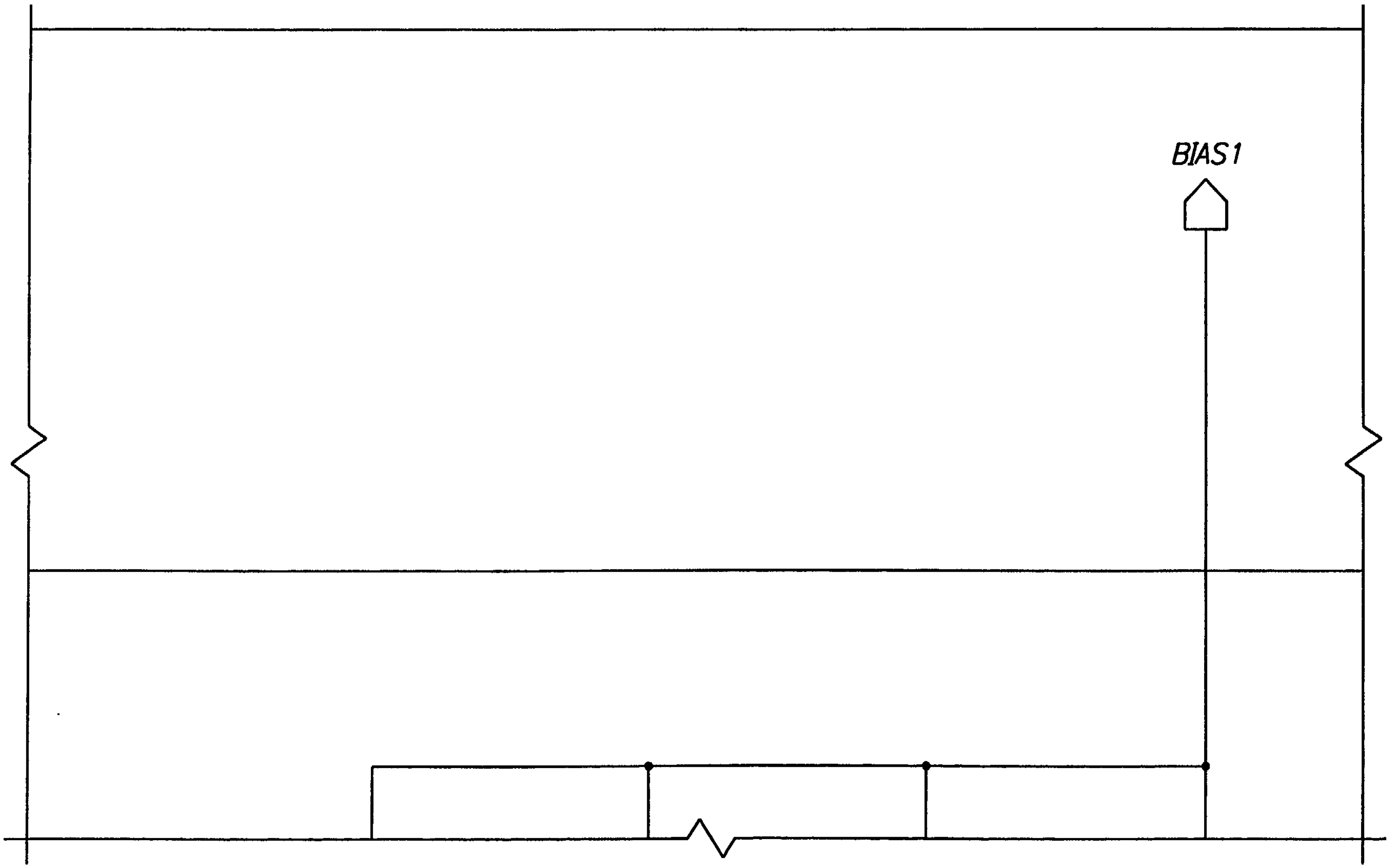


FIG 9.0104AC

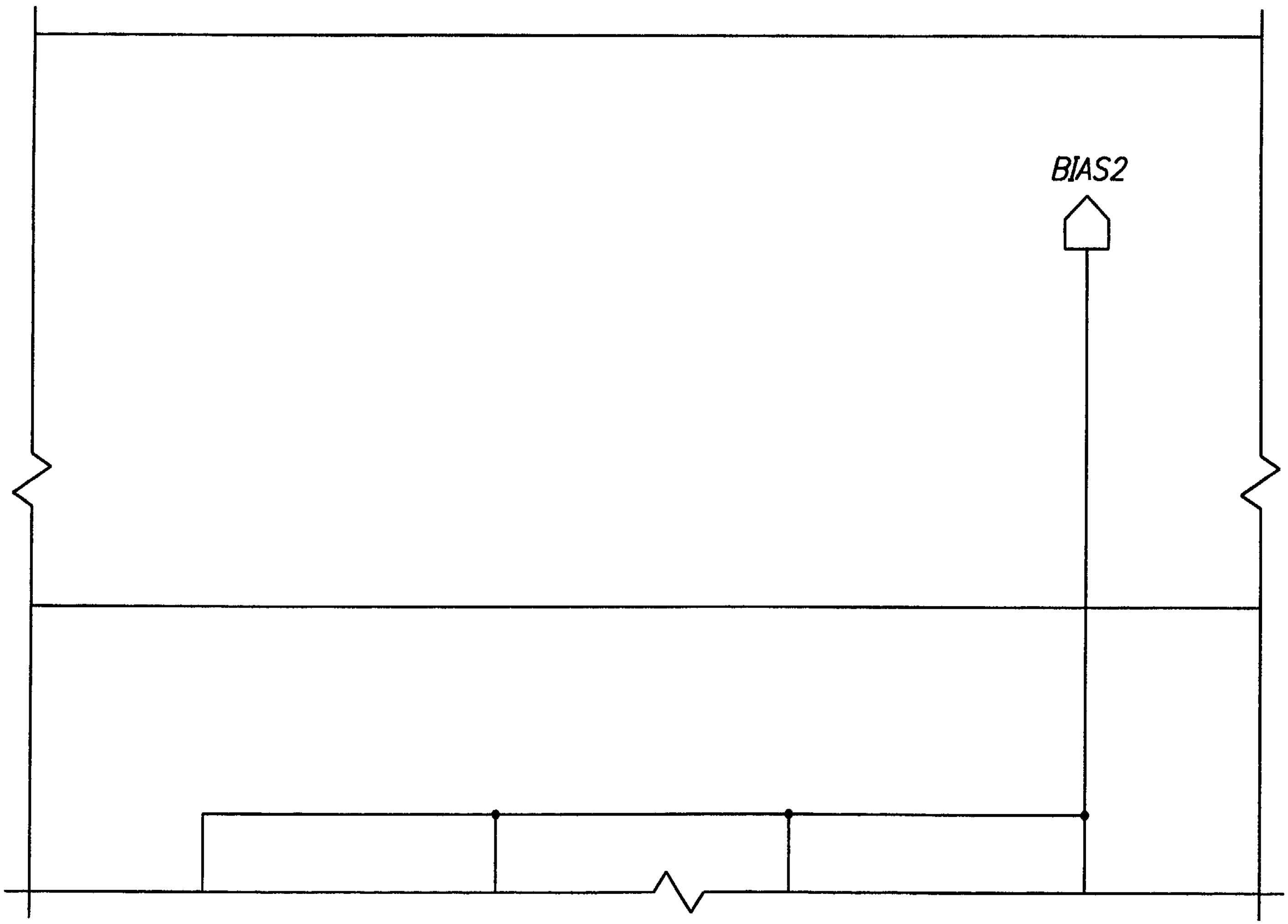


FIG 9.0104AD

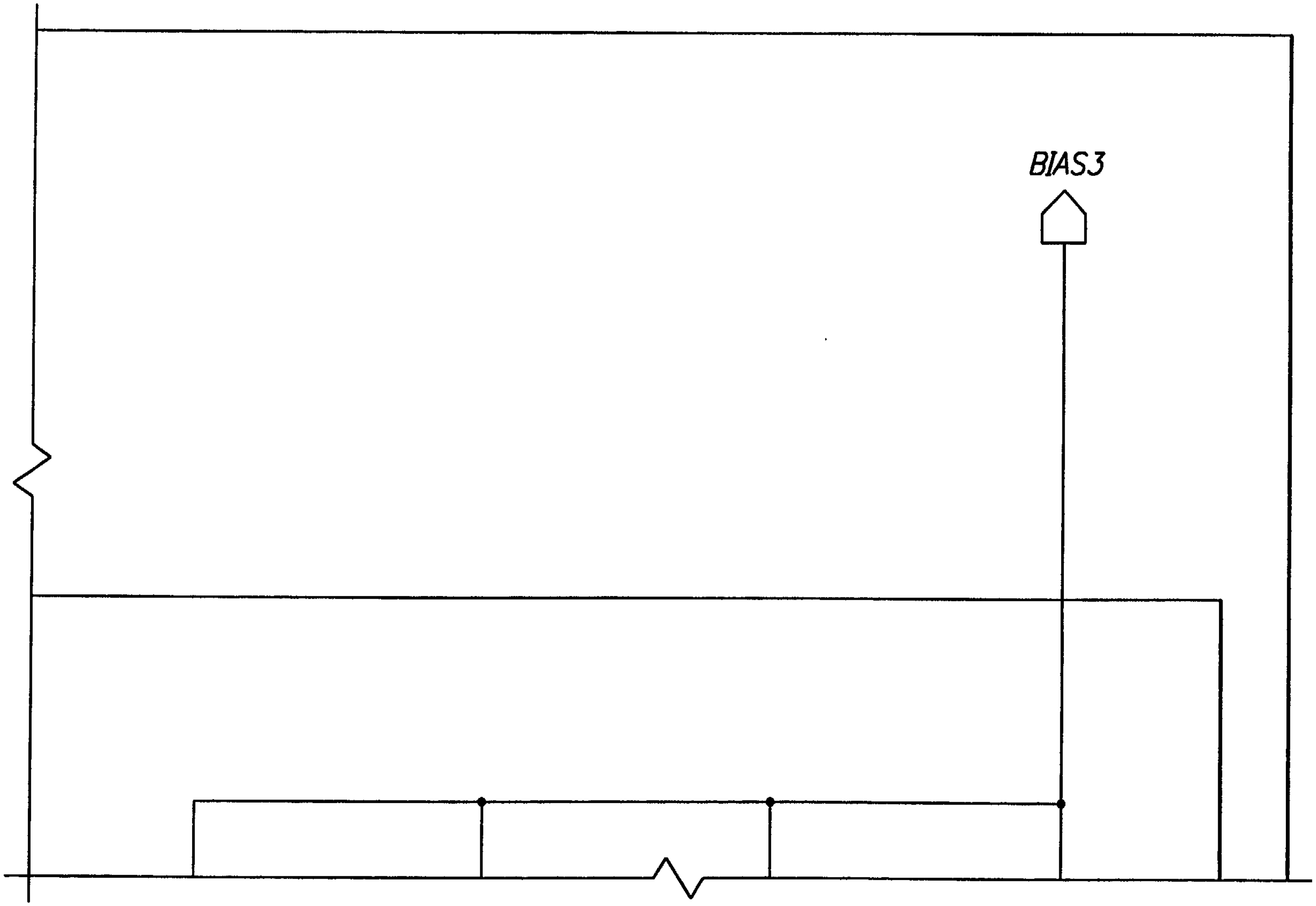
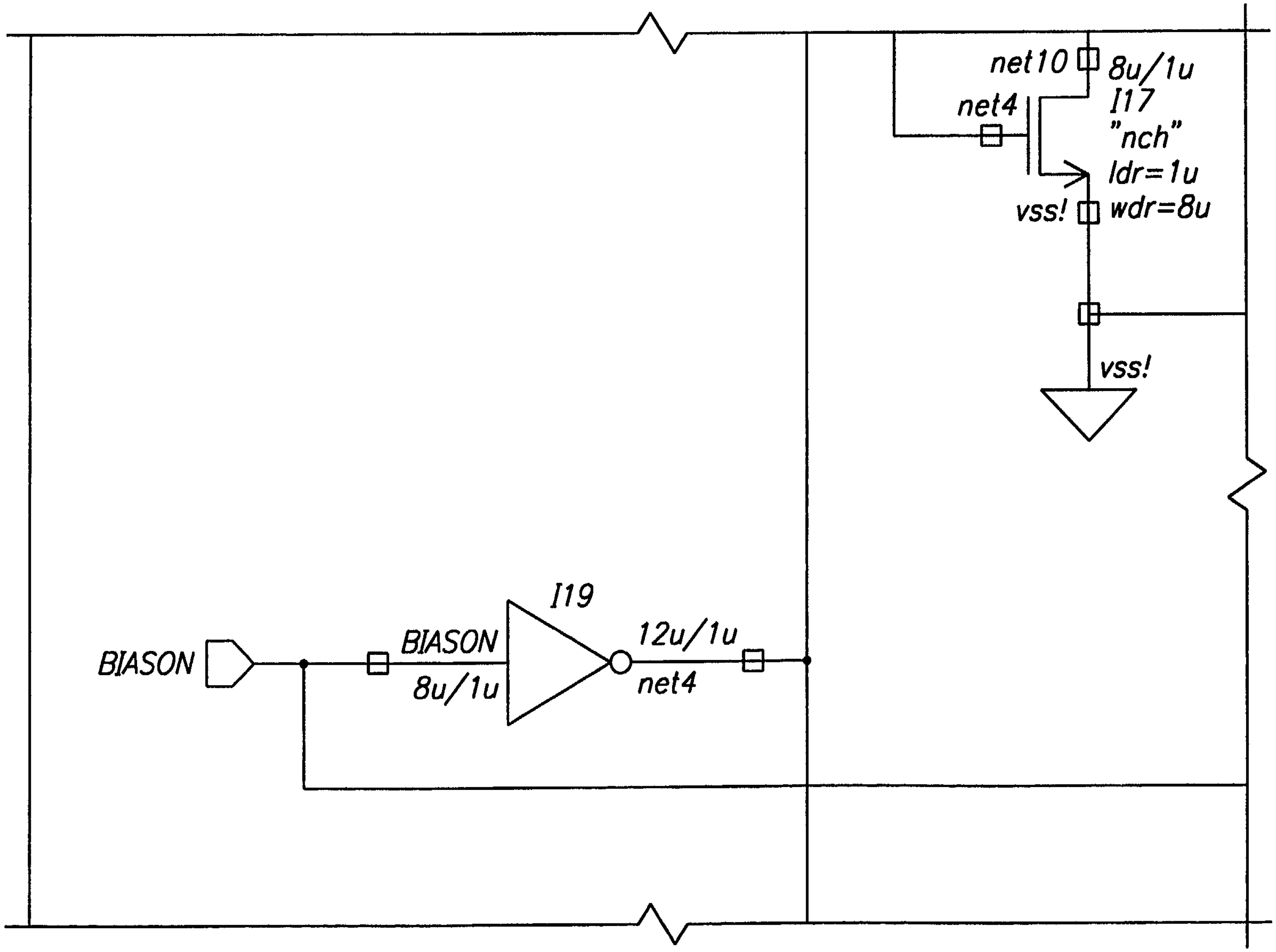


FIG 9.0104AE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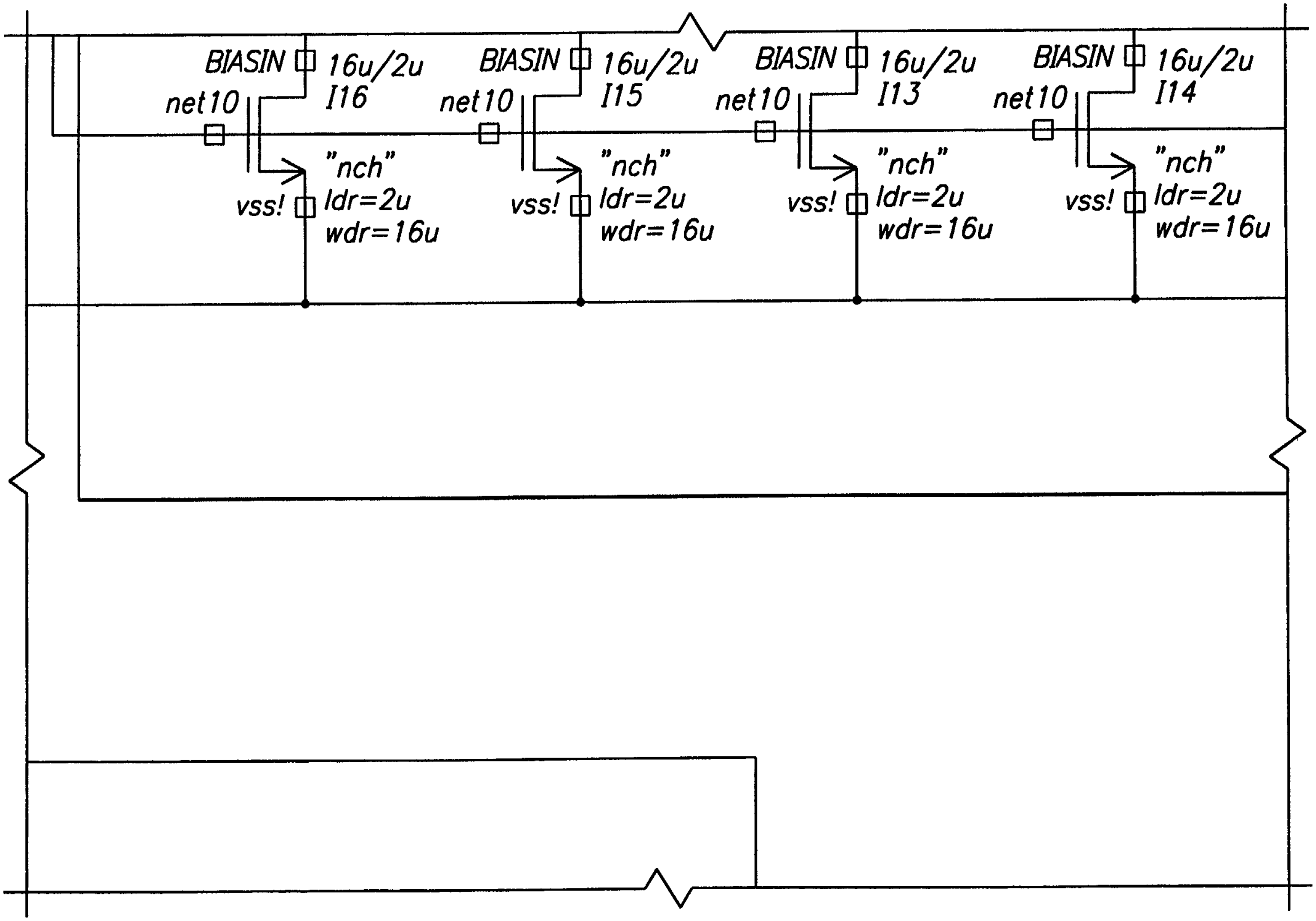
vss!
I19
BIASON
8u/1u
12u/1u
net4
BIASON

Fig. 9.0104BA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vss!
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wdr=16u
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net10
"nch"
vss!
ldr=2u
wdr=16u
BIASIN
16u/2u
I13
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"nch"
vss!
ldr=2u
wdr=16u
BIASIN
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ldr=2u
wdr=16u

FIG 9.0104BB

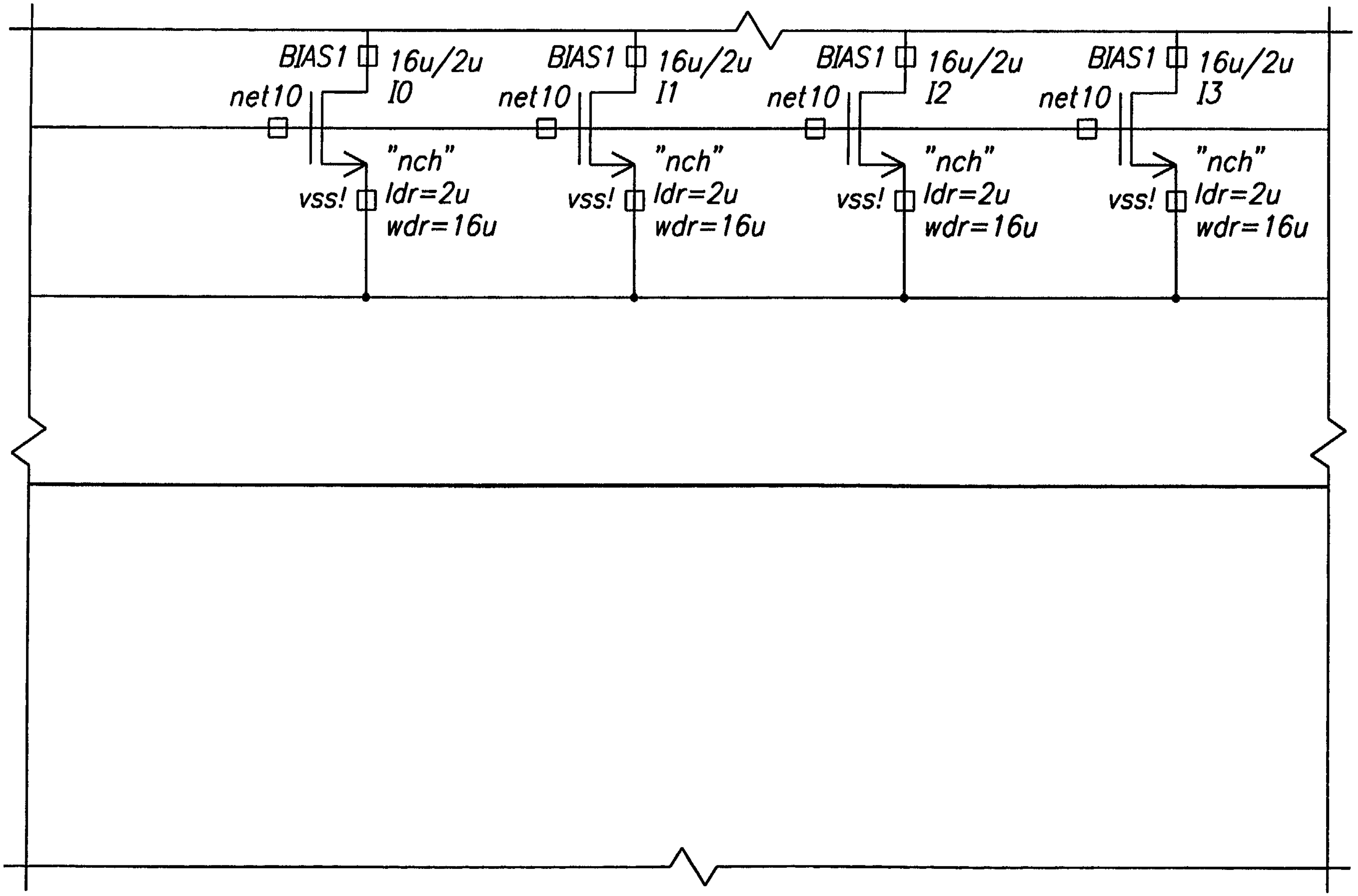

BIAS1
16u/2u
I0
net10
"nch"
vss!
ldr=2u
wdr=16u
BIAS1
16u/2u
I1
net10
"nch"
vss!
ldr=2u
wdr=16u
BIAS1
16u/2u
I2
net10
"nch"
vss!
ldr=2u
wdr=16u
BIAS1
16u/2u
I3
net10
"nch"
vss!
ldr=2u
wdr=16u

FIG 9.0104BC

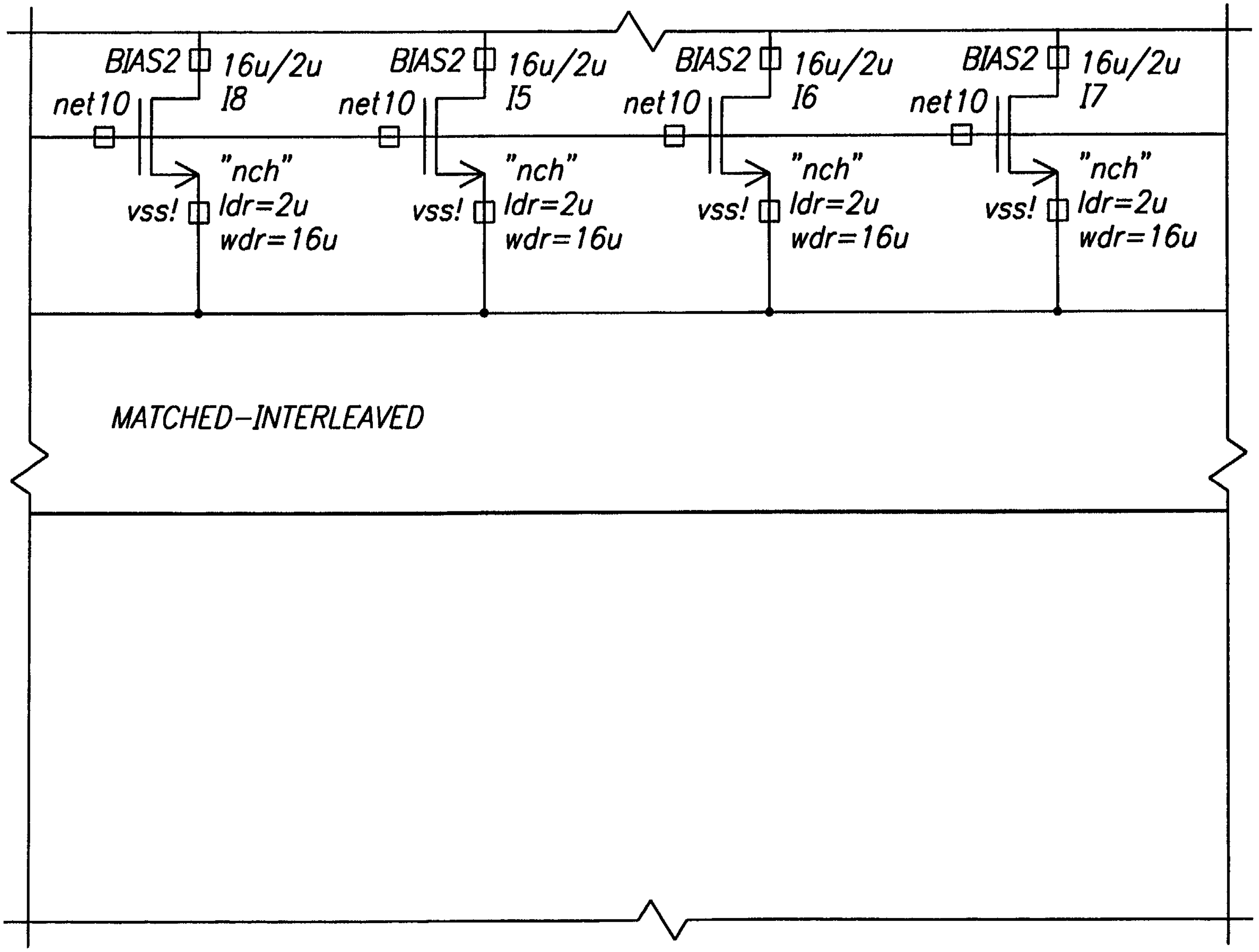

BIAS2
16u/2u
I8
net10
"nch"
vss!
ldr=2u
wdr=16u
BIAS2
16u/2u
I5
net10
"nch"
vss!
ldr=2u
wdr=16u
BIAS2
16u/2u
I6
net10
"nch"
vss!
ldr=2u
wdr=16u
BIAS2
16u/2u
I7
net10
"nch"
vss!
ldr=2u
wdr=16u
MATCHED-INTERLEAVED

FIG 9.0104BD

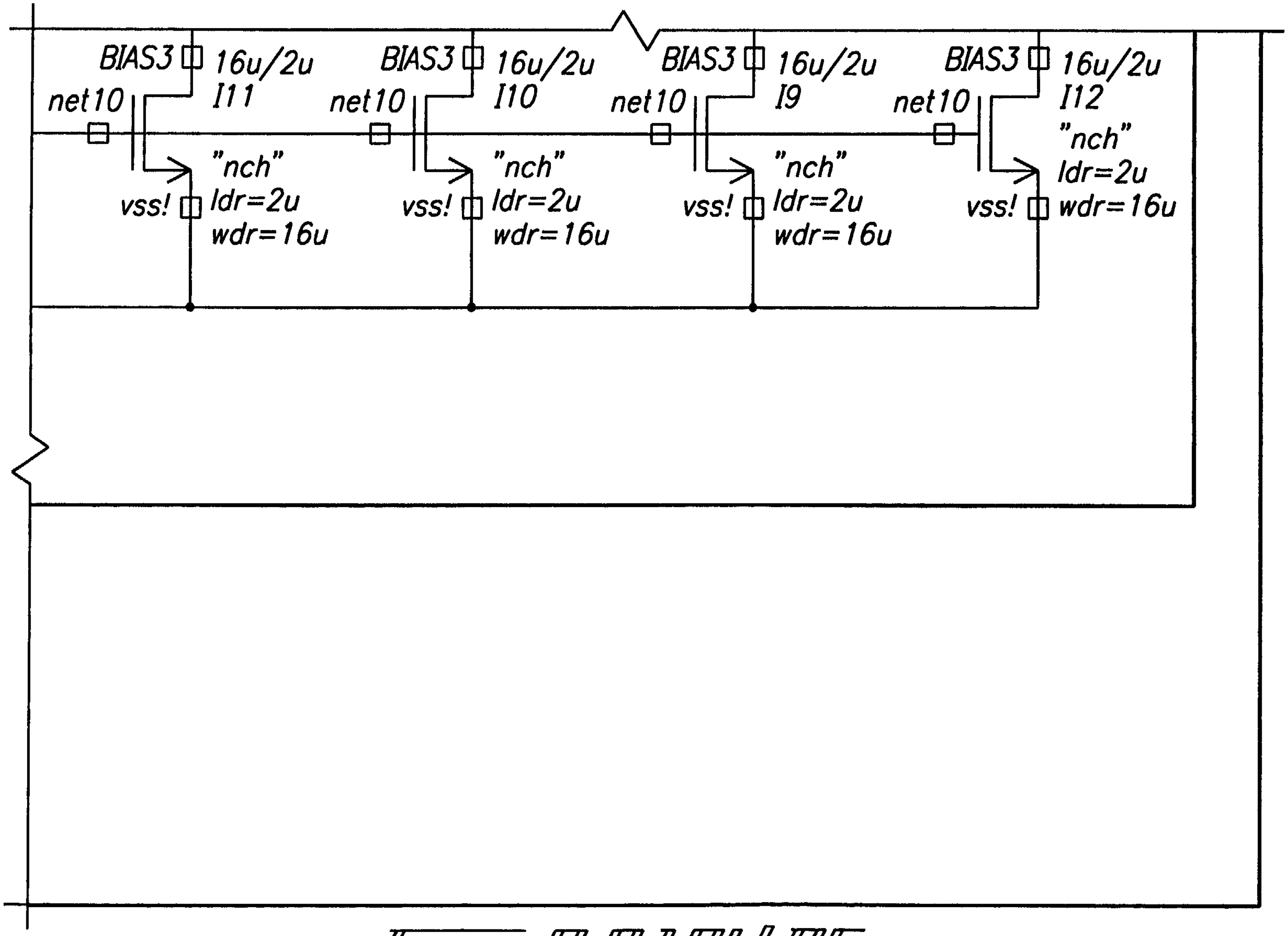

BIAS3
16u/2u
I11
net10
"nch"
vss!
ldr=2u
wdr=16u
BIAS3
16u/2u
I10
net10
"nch"
vss!
ldr=2u
wdr=16u
BIAS3
16u/2u
I9
net10
"nch"
vss!
ldr=2u
wdr=16u
BIAS3
16u/2u
I12
net10
"nch"
ldr=2u
vss!
wdr=16u

Fig 9.0104BE

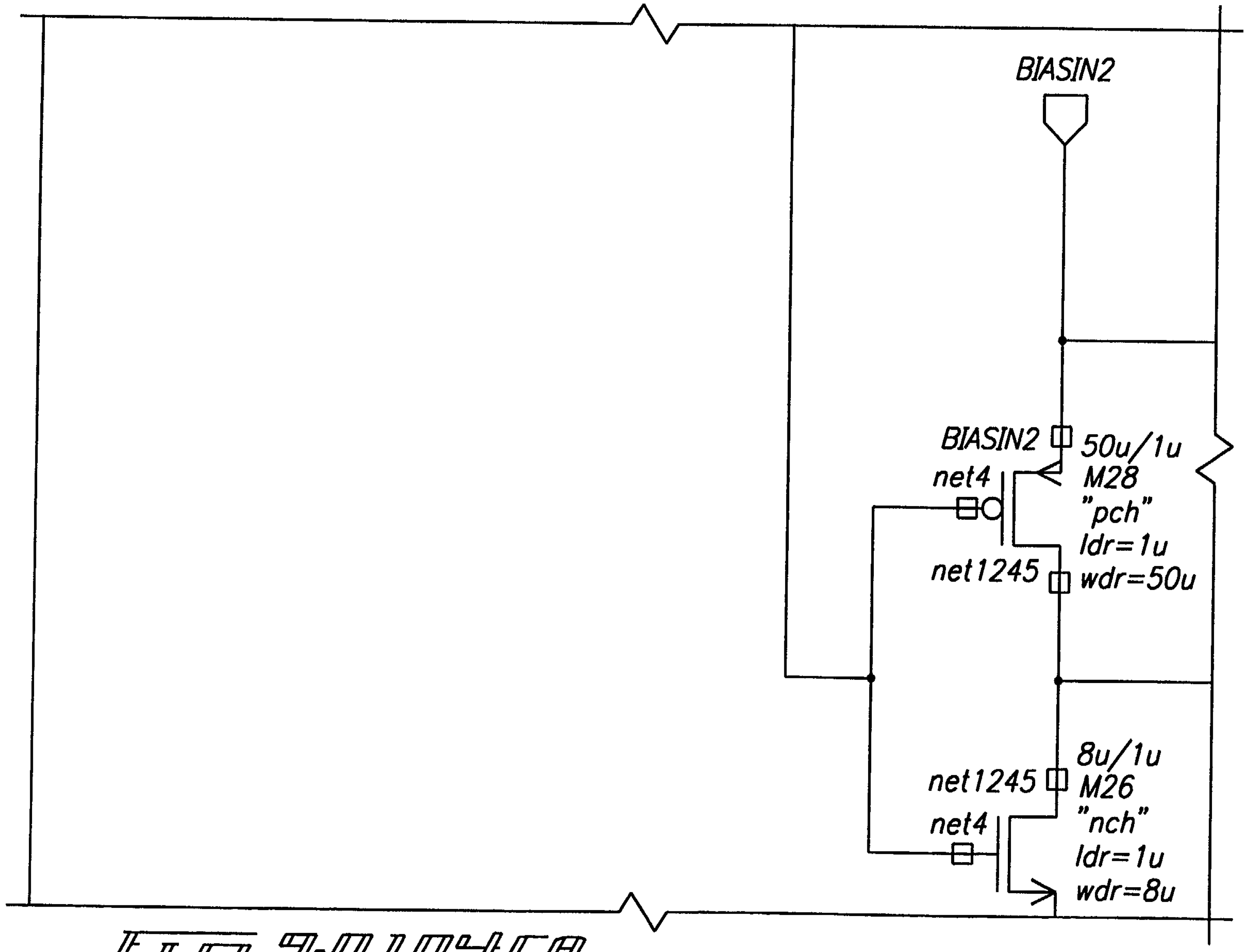

BIASIN2
BIASIN2
50u/1u
M28
"pch"
ldr=1u
wdr=50u
net4
net1245
8u/1u
M26
"nch"
ldr=1u
wdr=8u
net1245
net4

FIG. 9.0104CA

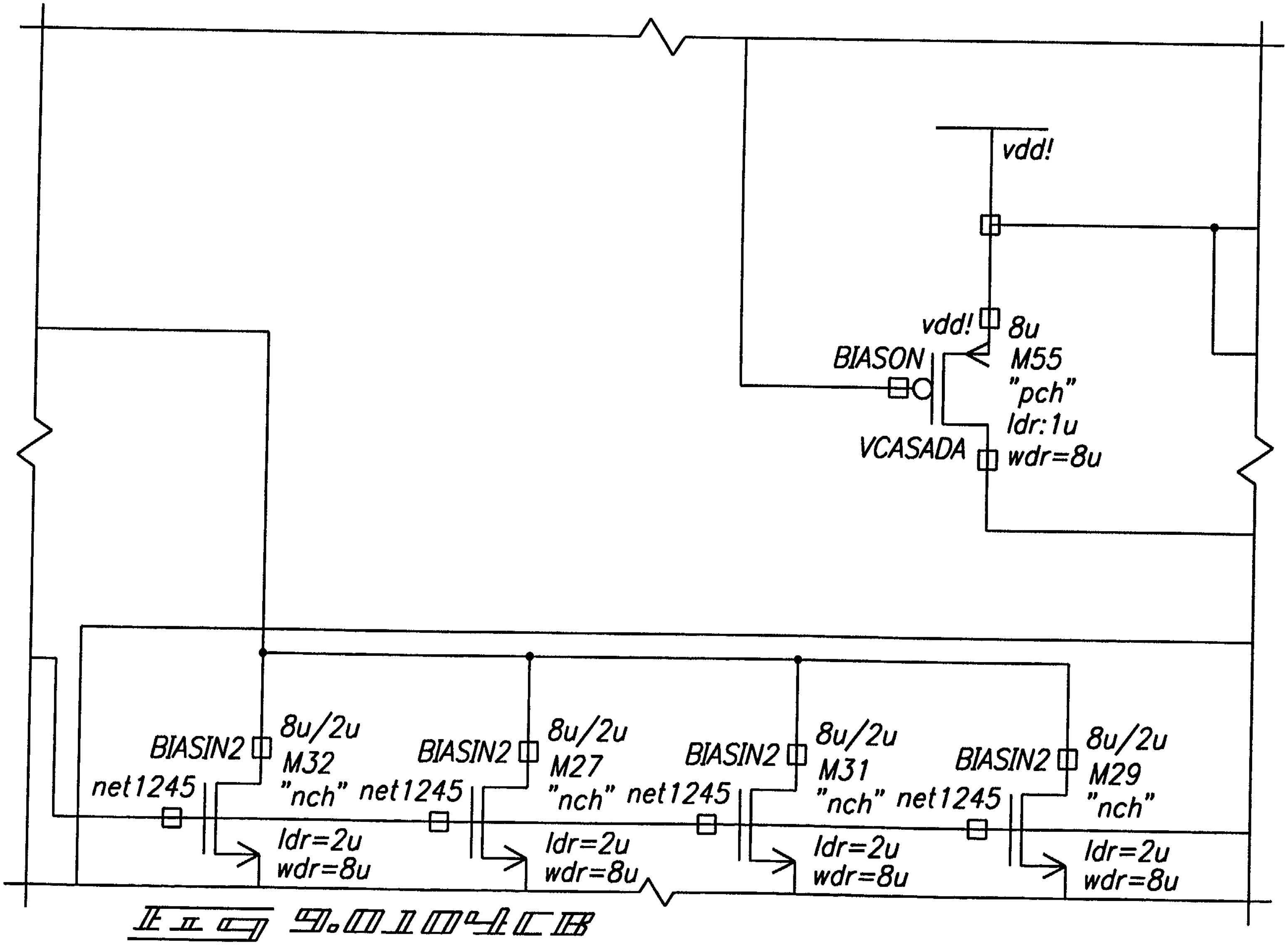

vdd!
vdd!
8u
M55
"pch"
ldr:1u
wdr=8u
BIASON
VCASADA
BIASIN2
8u/2u
M32
"nch"
net1245
ldr=2u
wdr=8u
BIASIN2
8u/2u
M27
"nch"
net1245
ldr=2u
wdr=8u
BIASIN2
8u/2u
M31
"nch"
net1245
ldr=2u
wdr=8u
BIASIN2
8u/2u
M29
"nch"
net1245
ldr=2u
wdr=8u

Fig 9.0104CB

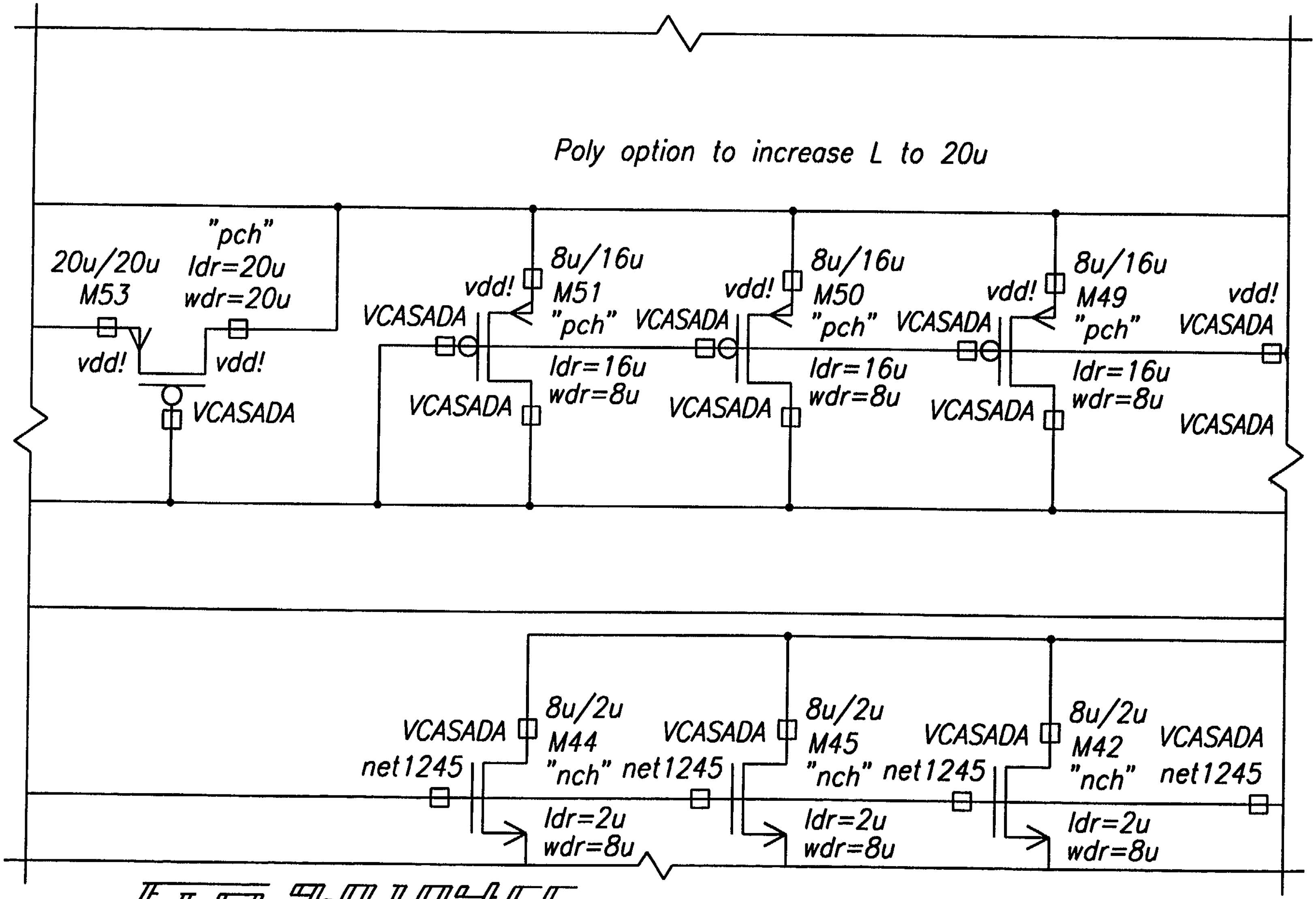

Poly option to increase L to 20u
20u/20u
M53
"pch"
ldr=20u
wdr=20u
vdd!
vdd!
VCASADA
8u/16u
M51
"pch"
vdd!
VCASADA
ldr=16u
wdr=8u
VCASADA
8u/16u
M50
"pch"
vdd!
VCASADA
ldr=16u
wdr=8u
VCASADA
8u/16u
M49
"pch"
vdd!
VCASADA
ldr=16u
wdr=8u
VCASADA
vdd!
VCASADA
VCASADA
8u/2u
M44
"nch"
net1245
ldr=2u
wdr=8u
VCASADA
8u/2u
M45
"nch"
net1245
ldr=2u
wdr=8u
VCASADA
8u/2u
M42
"nch"
net1245
ldr=2u
wdr=8u
VCASADA
net1245

Fig 9.0104CC

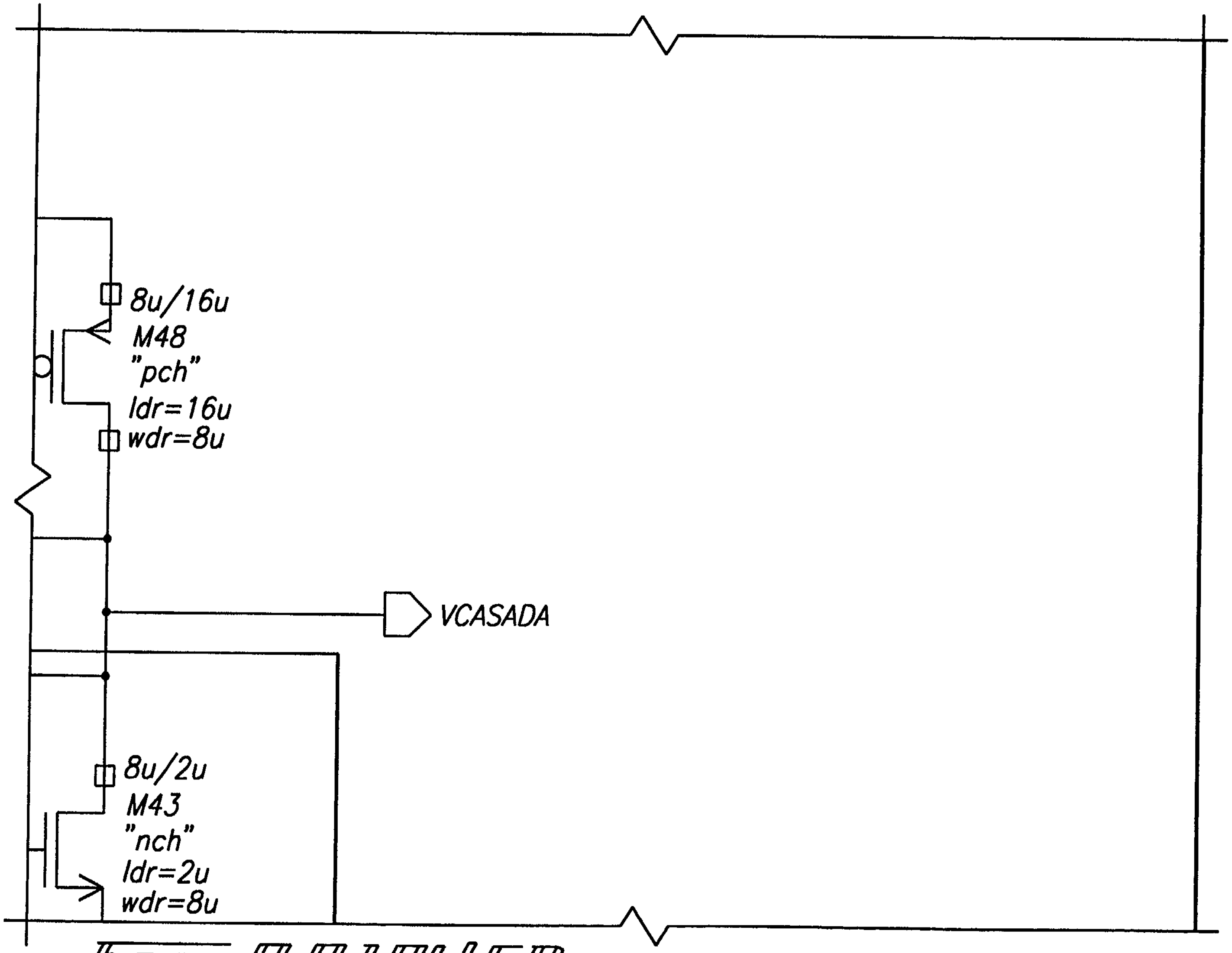


Fig 9.0104CD

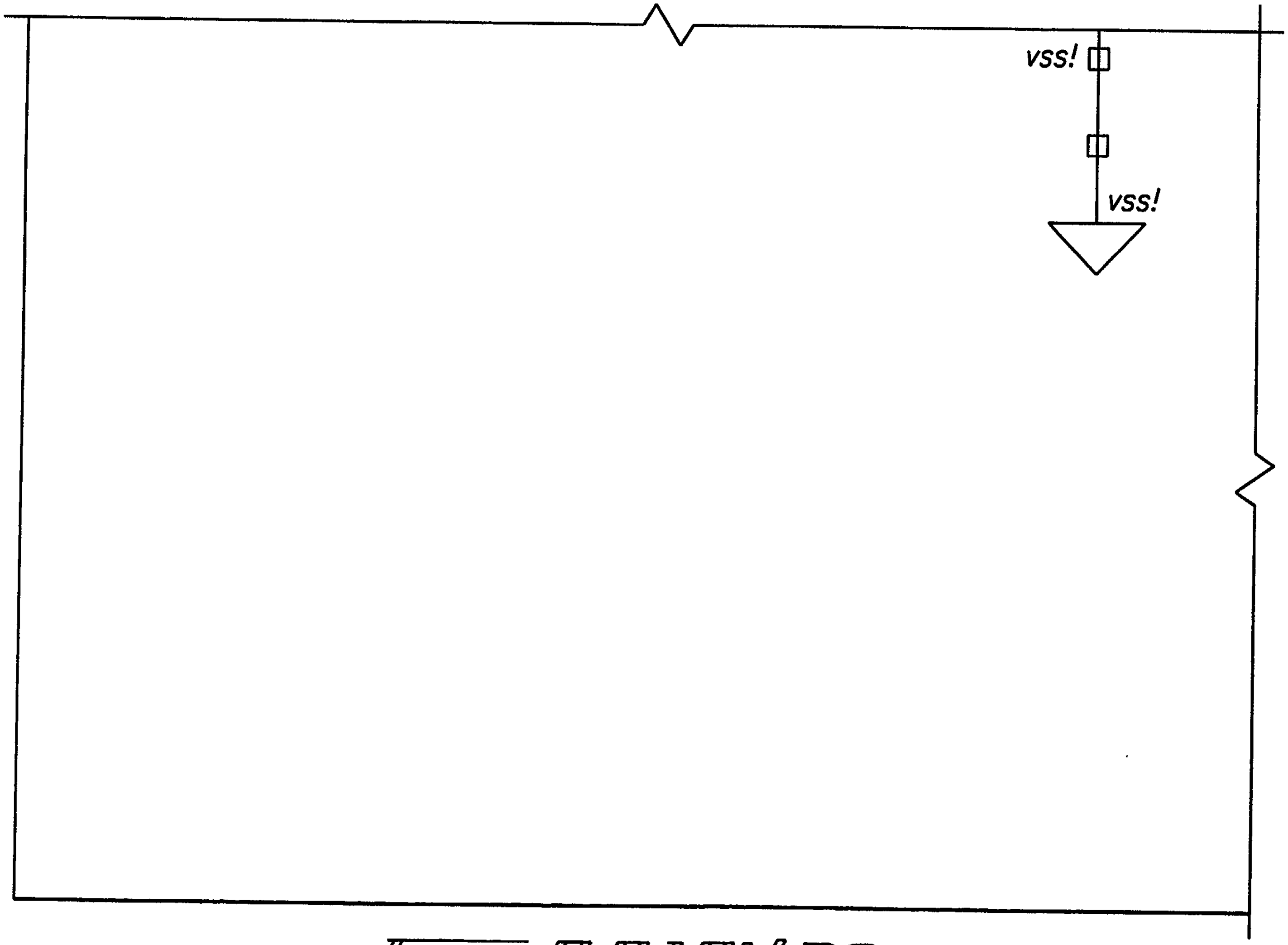


Fig 9.0104DA

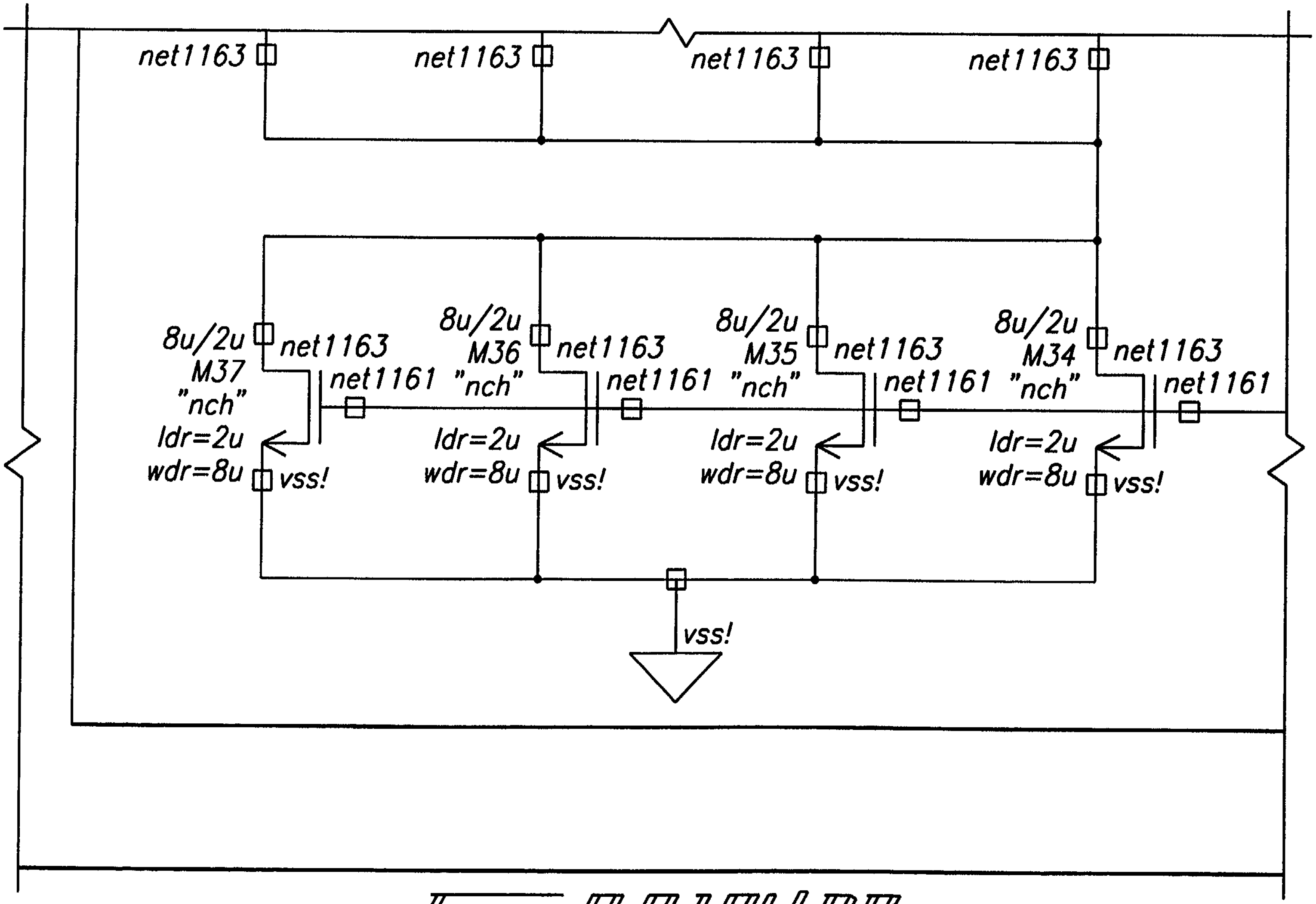

net1163
net1163
net1163
net1163
8u/2u
M37
"nch"
ldr=2u
wdr=8u
net1163
net1161
vss!
8u/2u
M36
"nch"
ldr=2u
wdr=8u
net1163
net1161
vss!
8u/2u
M35
"nch"
ldr=2u
wdr=8u
net1163
net1161
vss!
8u/2u
M34
"nch"
ldr=2u
wdr=8u
net1163
net1161
vss!
vss!

Fig 9.0104DB

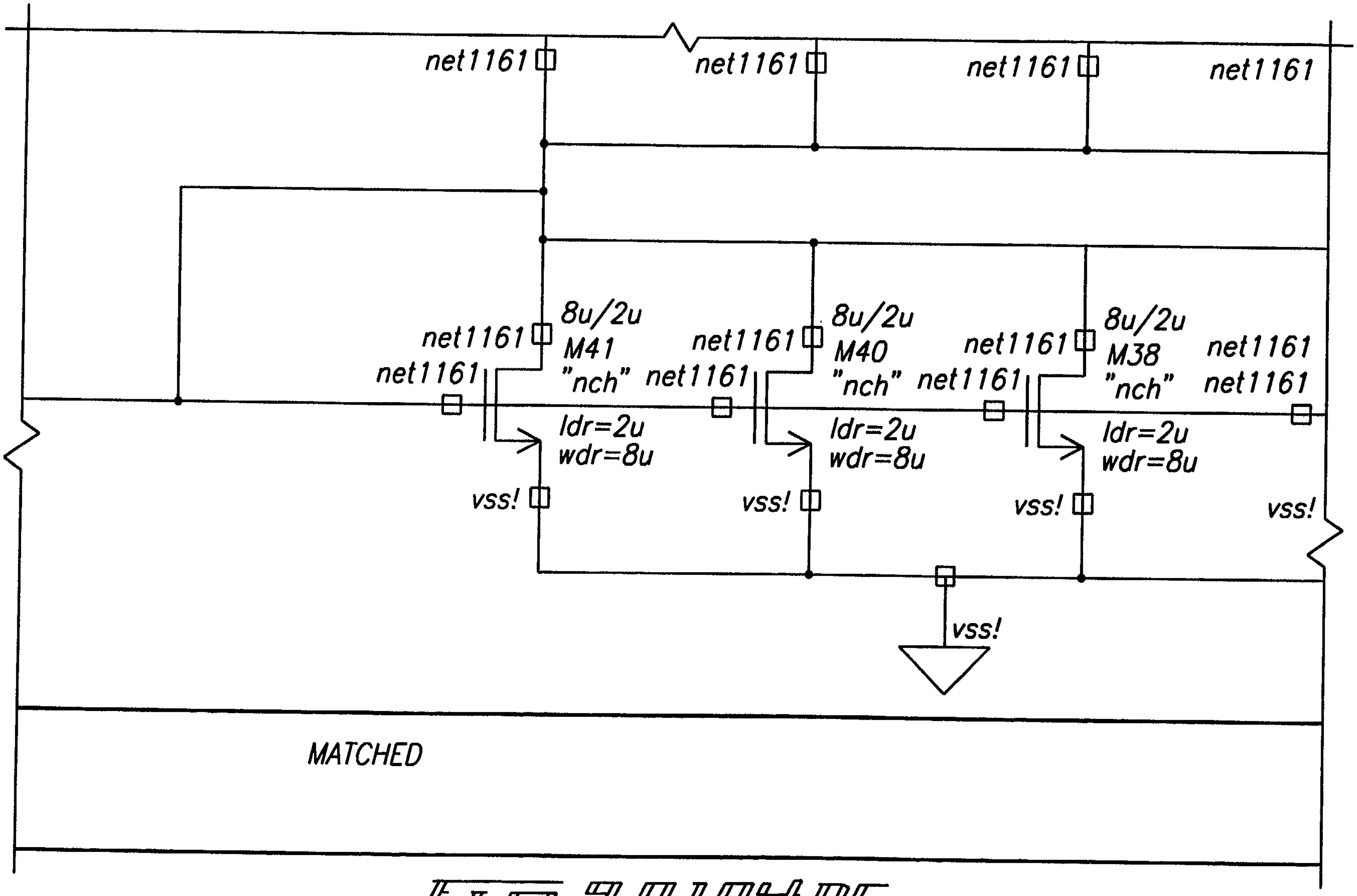

net1161
net1161
net1161
net1161
net1161
net1161
8u/2u
M41
"nch"
ldr=2u
wdr=8u
vss!
net1161
net1161
8u/2u
M40
"nch"
ldr=2u
wdr=8u
vss!
net1161
net1161
8u/2u
M38
"nch"
ldr=2u
wdr=8u
vss!
net1161
net1161
vss!
vss!
MATCHED

FIG 9.0104DC

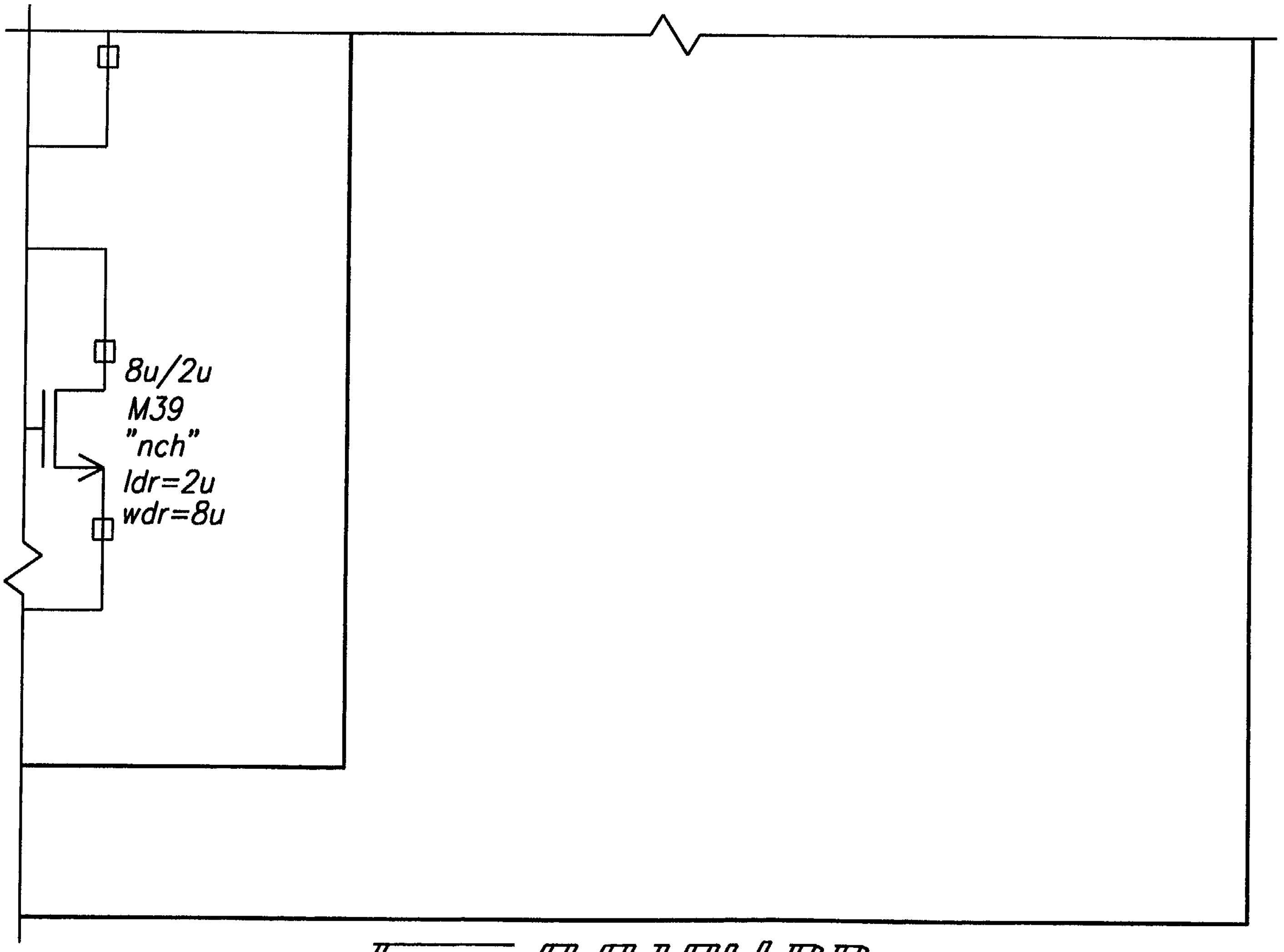


FIG 9.0104DD

9.02AA	9.02AB	9.02AC	9.02AD	9.02AE	9.02AF	9.02AG	9.02AH	9.02AI	9.02AJ	9.02AK
9.02BA	9.02BB	9.02BC	9.02BD	9.02BE	9.02BF	9.02BG	9.02BH	9.02BI	9.02BJ	9.02BK
9.02CA		9.02CC	9.02CD	9.02CE	9.02CF	9.02CG	9.02CH	9.02CI	9.02CJ	9.02CK
9.02DA	9.02DB	9.02DC	9.02DD		9.02DF	9.02DG	9.02DH	9.02DI	9.02DJ	9.02DK

Fig 9.02

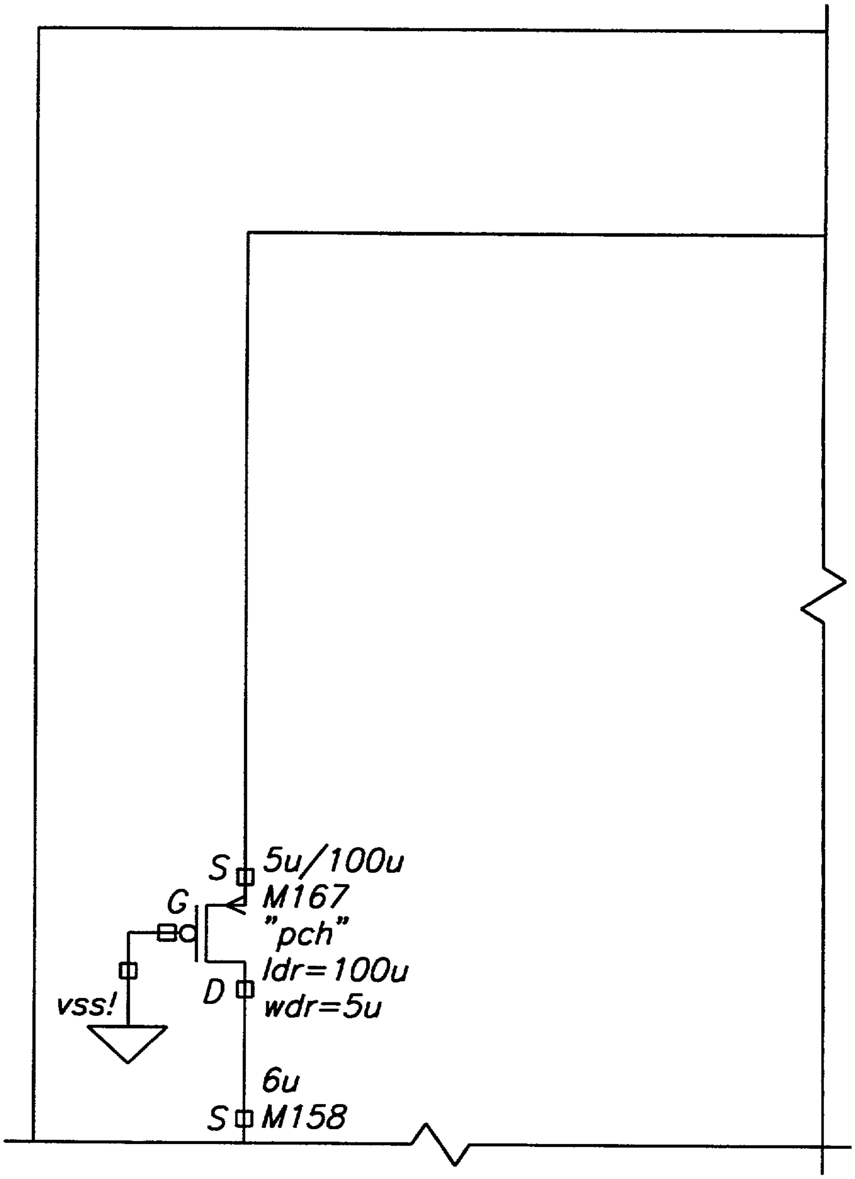


Fig 9.02AA

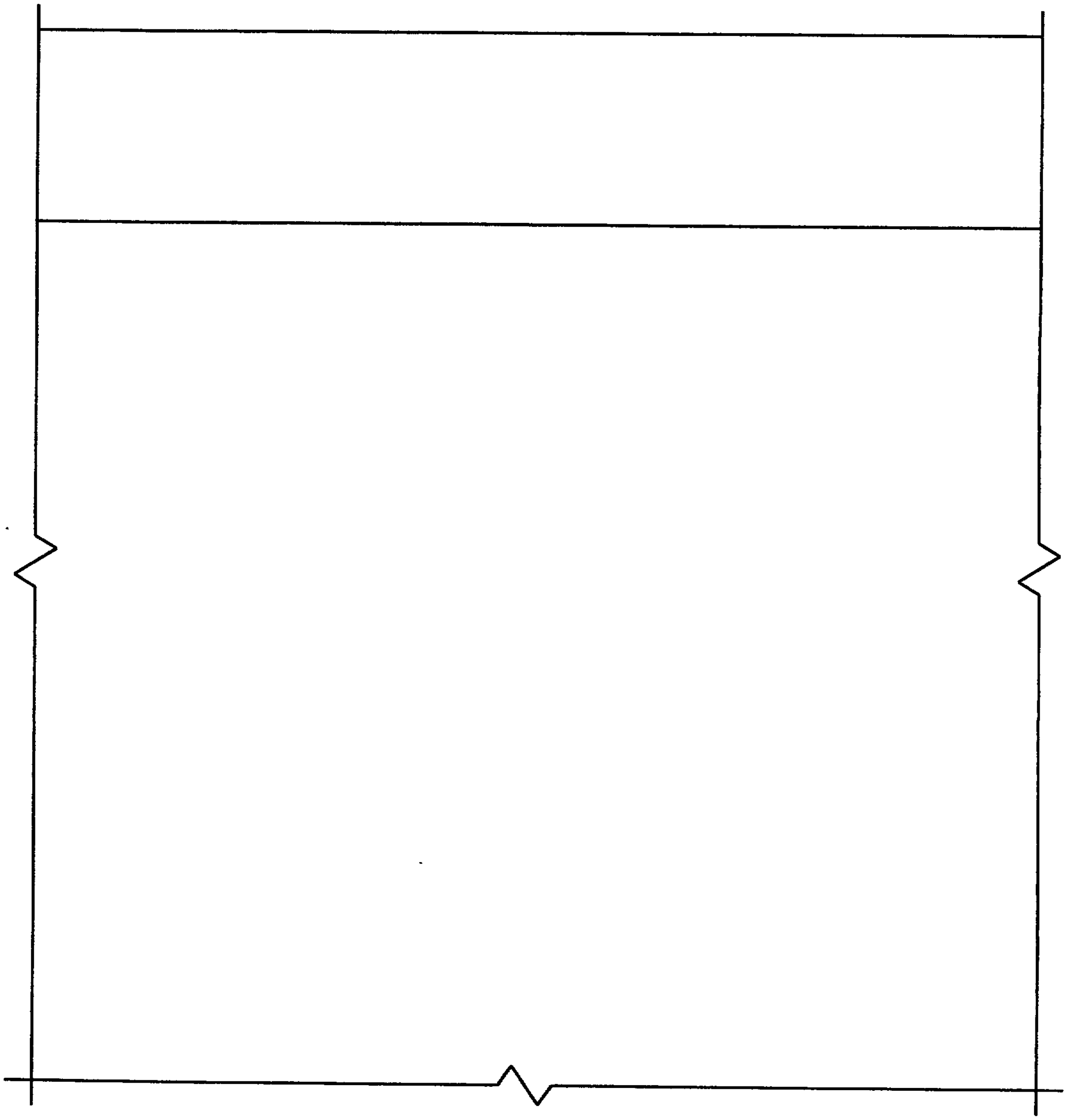


Fig 9.02AB

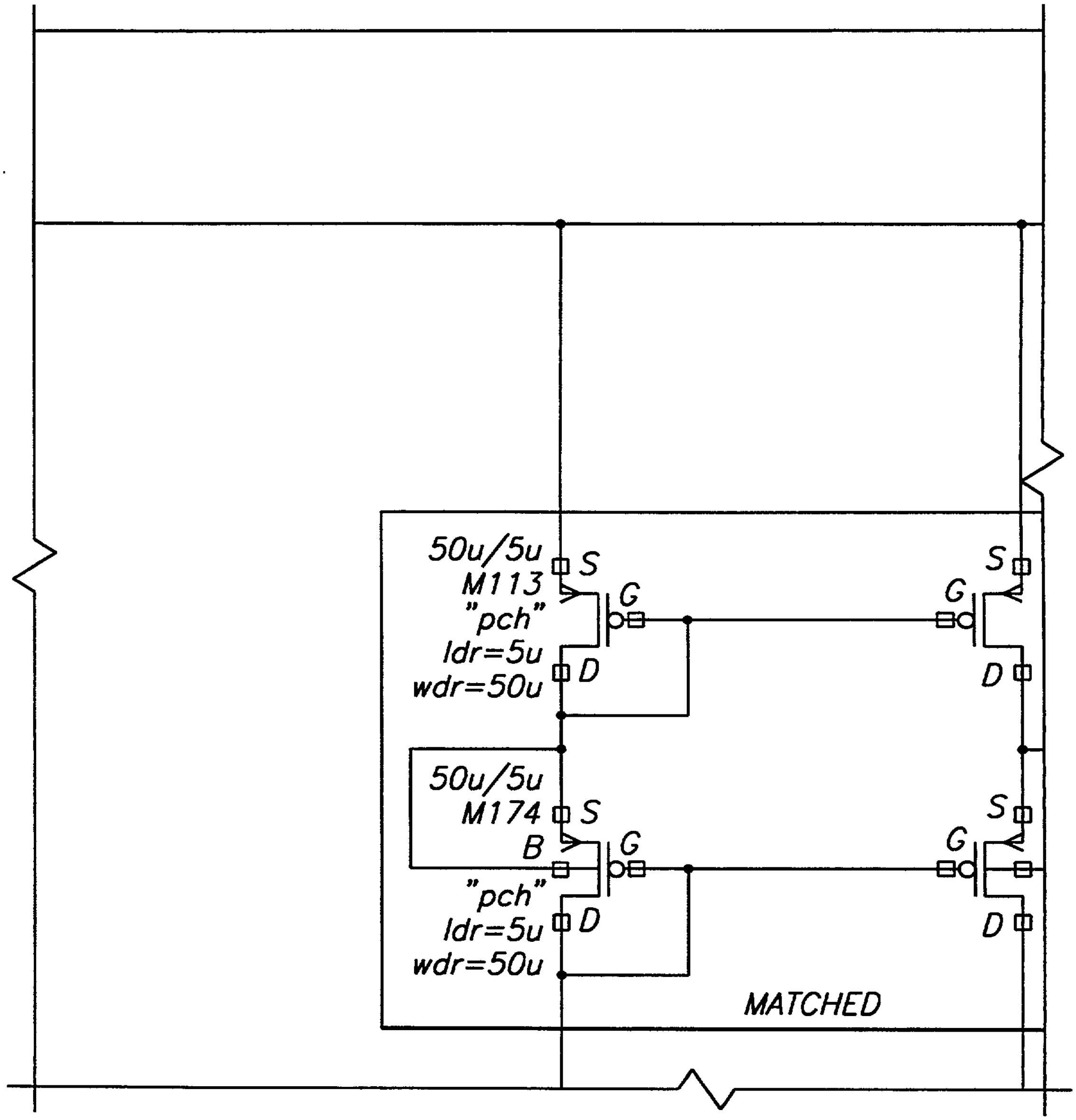

50u/5u
M113
"pch"
ldr=5u
wdr=50u
S
G
D
50u/5u
M174
B
"pch"
ldr=5u
wdr=50u
S
G
D
S
G
D
S
G
D
MATCHED

Fig 9.02AC

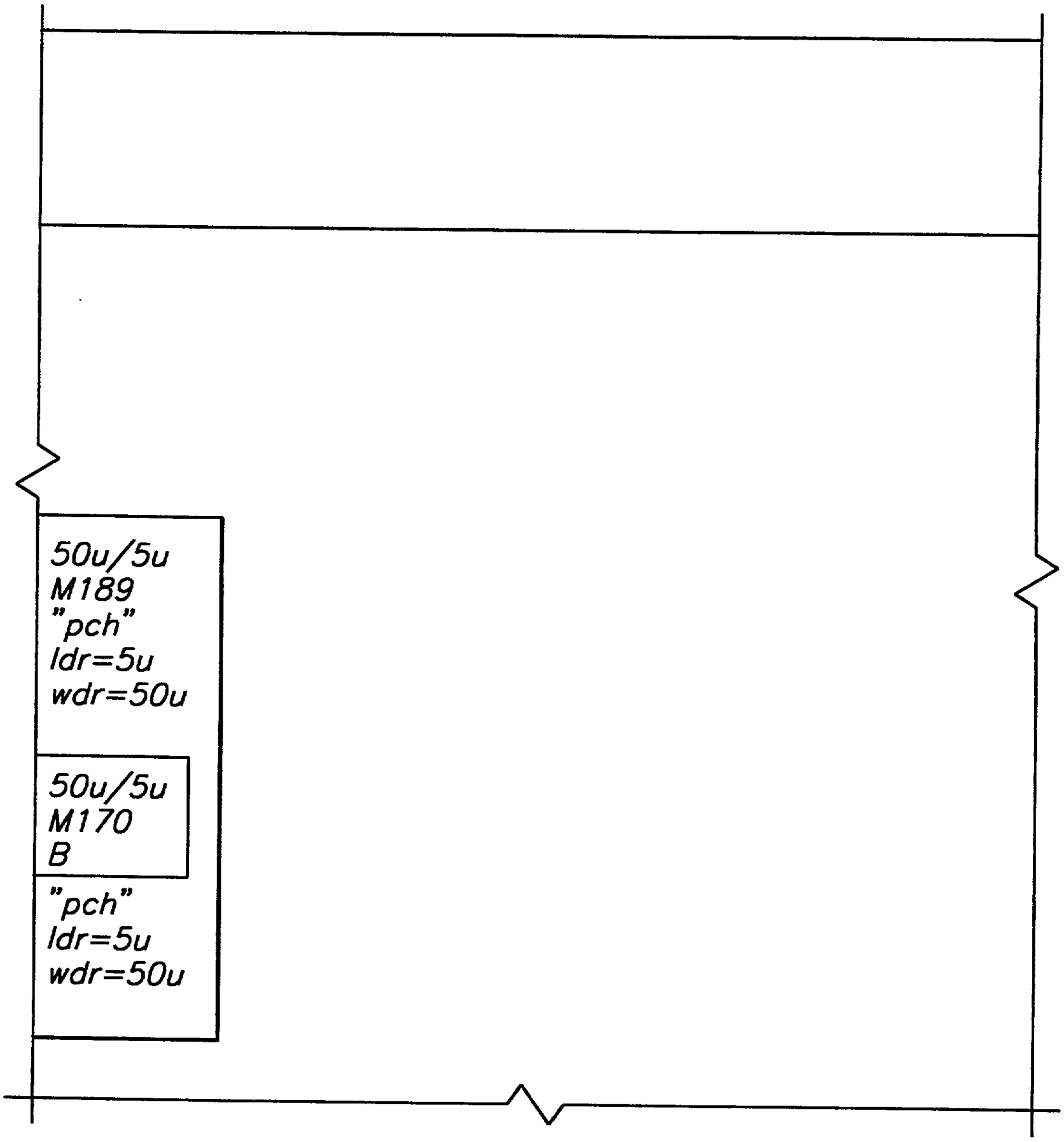


Fig 9.02AD

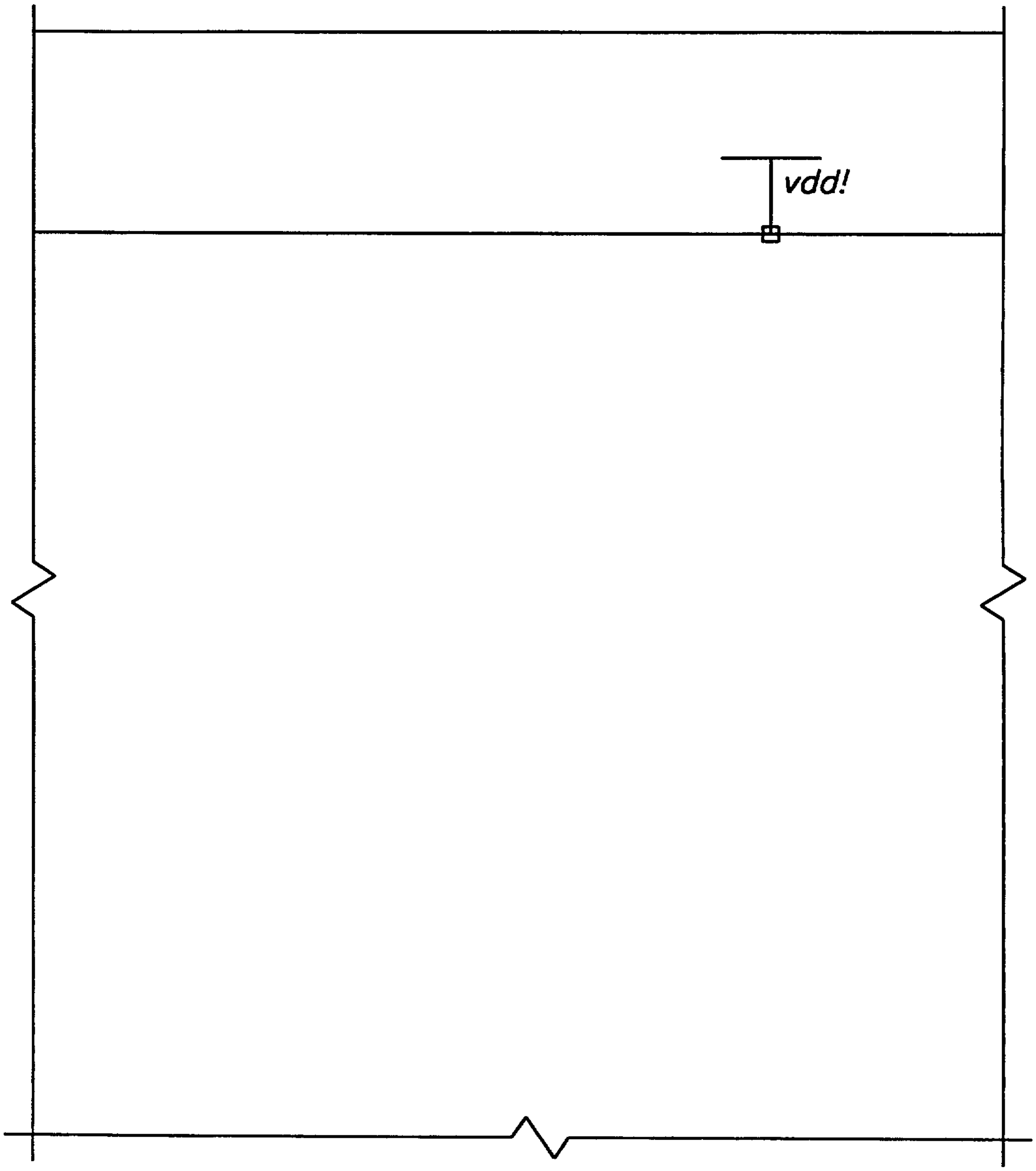


Fig 9.02AE

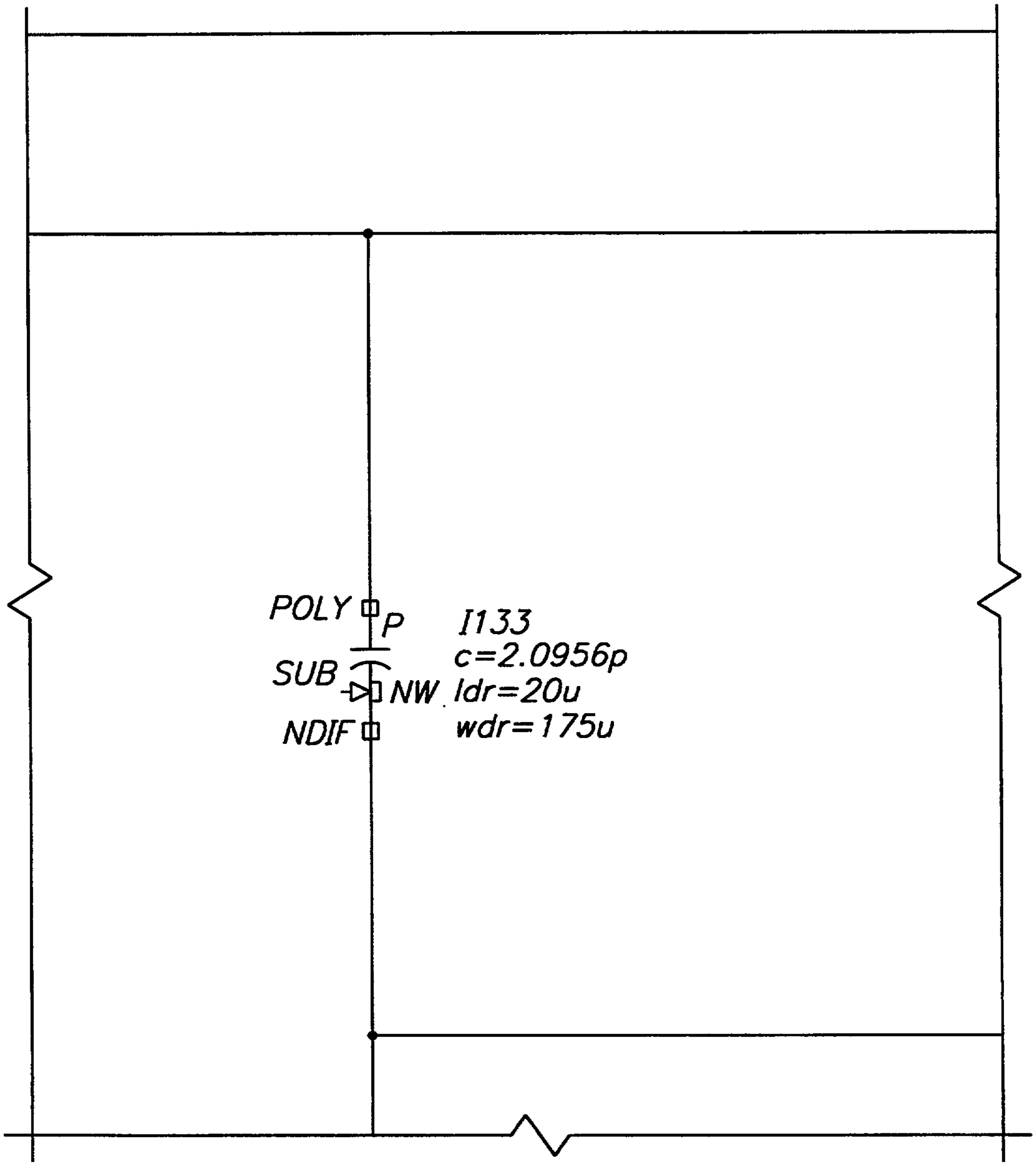


Fig 9.02AF

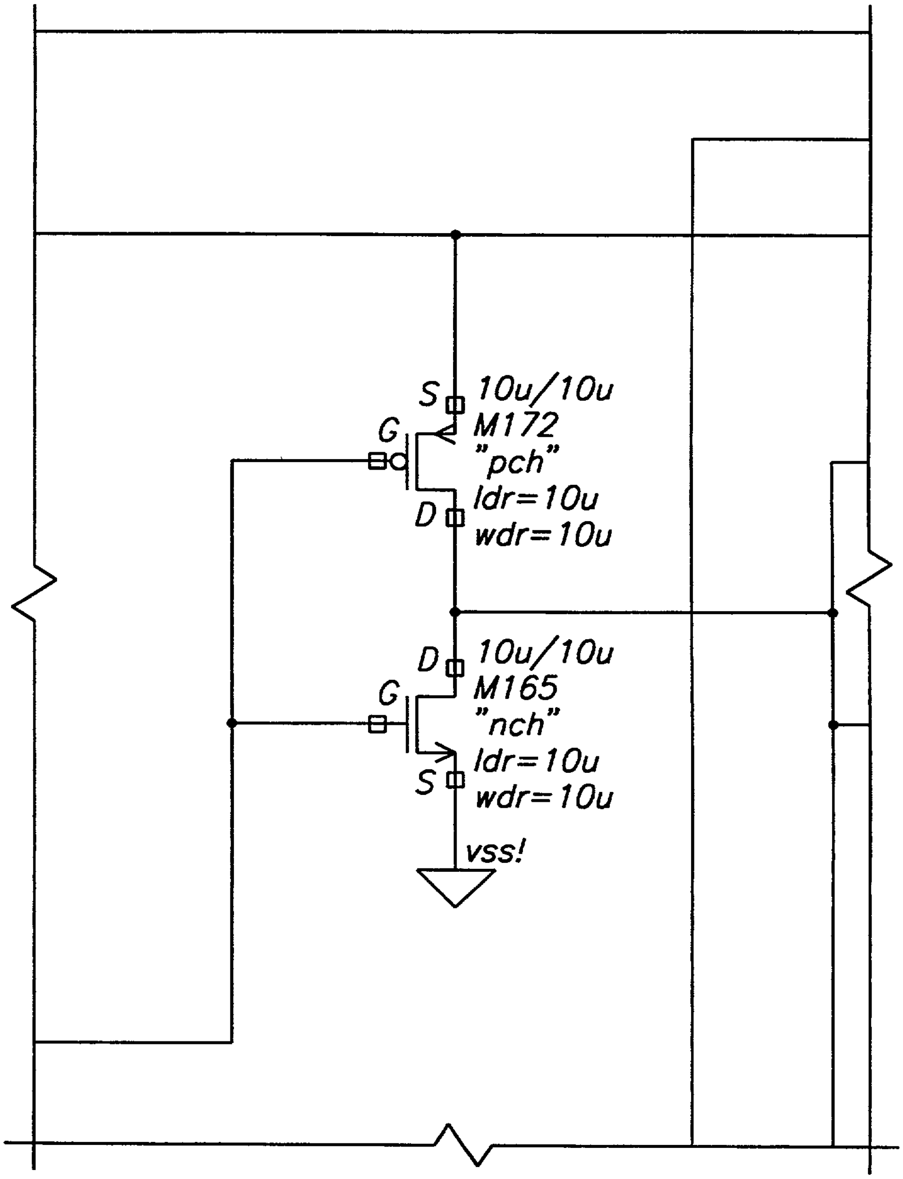

S
10u/10u
G
M172
"pch"
D
ldr=10u
wdr=10u
D
10u/10u
G
M165
"nch"
S
ldr=10u
wdr=10u
vss!

Fig 9.02AG

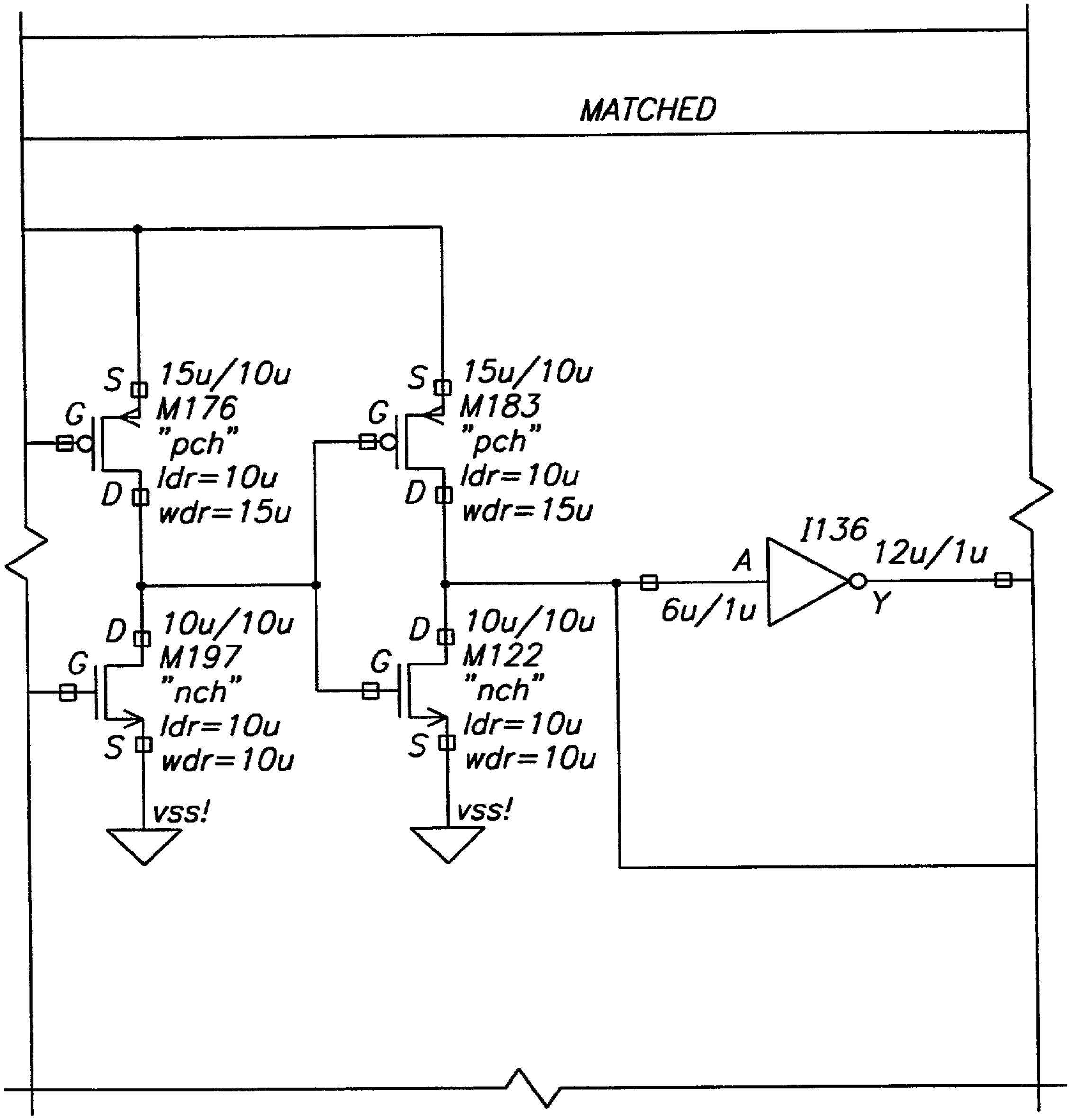

MATCHED
S
G
D
15u/10u
M176
"pch"
ldr=10u
wdr=15u
S
G
D
15u/10u
M183
"pch"
ldr=10u
wdr=15u
D
G
S
10u/10u
M197
"nch"
ldr=10u
wdr=10u
vss!
D
G
S
10u/10u
M122
"nch"
ldr=10u
wdr=10u
vss!
I136
A
Y
6u/1u
12u/1u

Fig 9.02AH

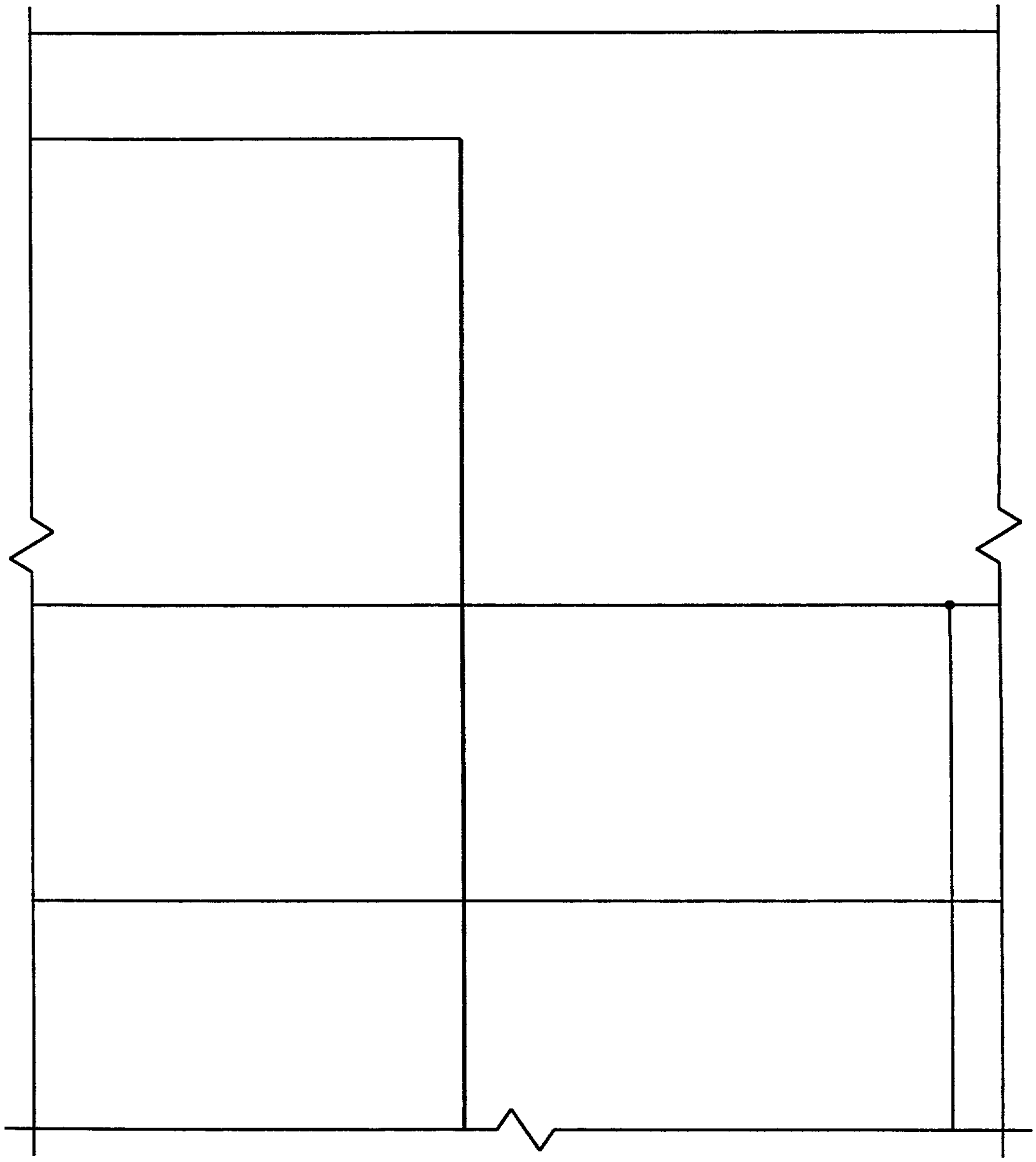


Fig 9.02A1

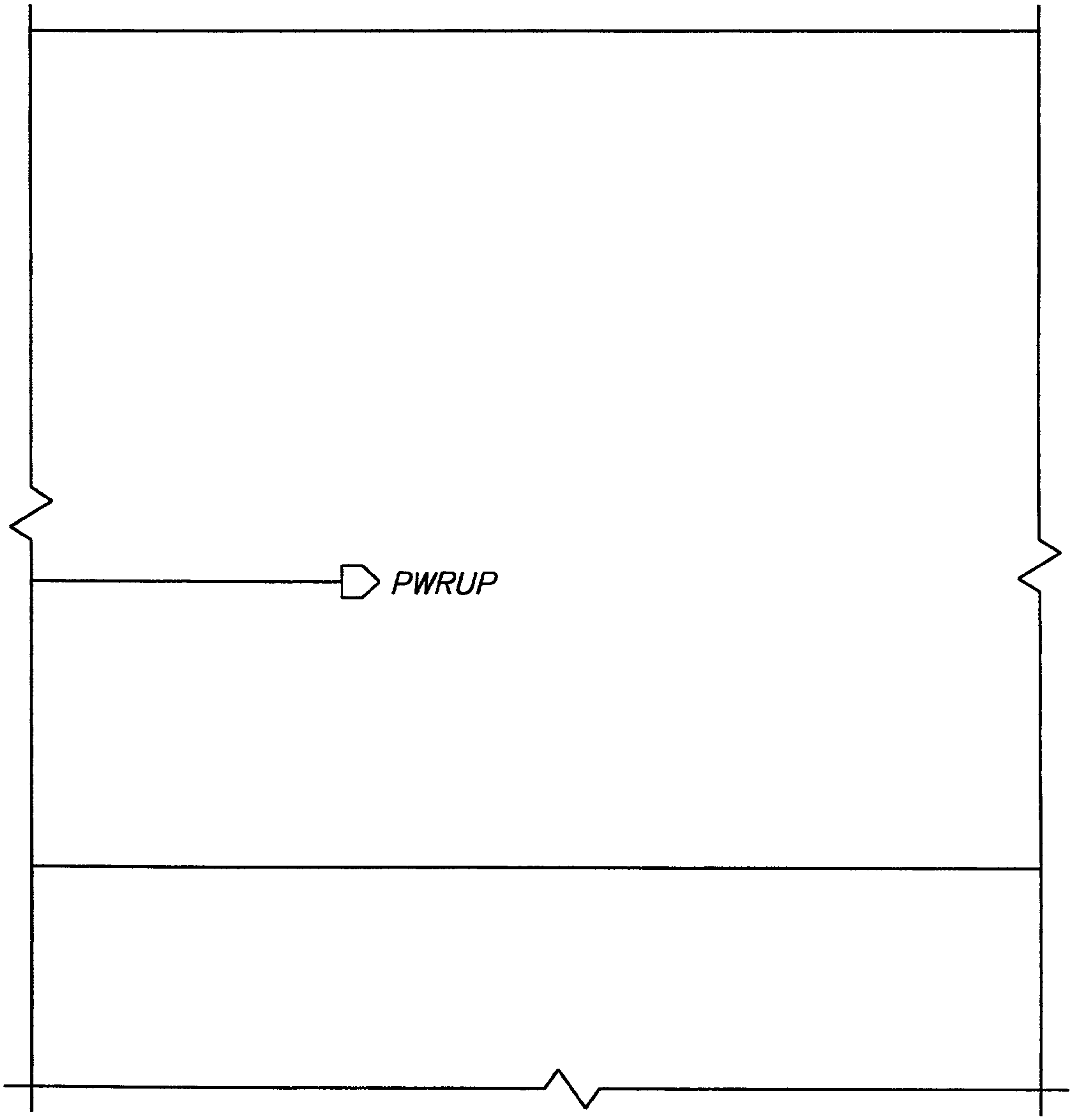


Fig 9.02AJ

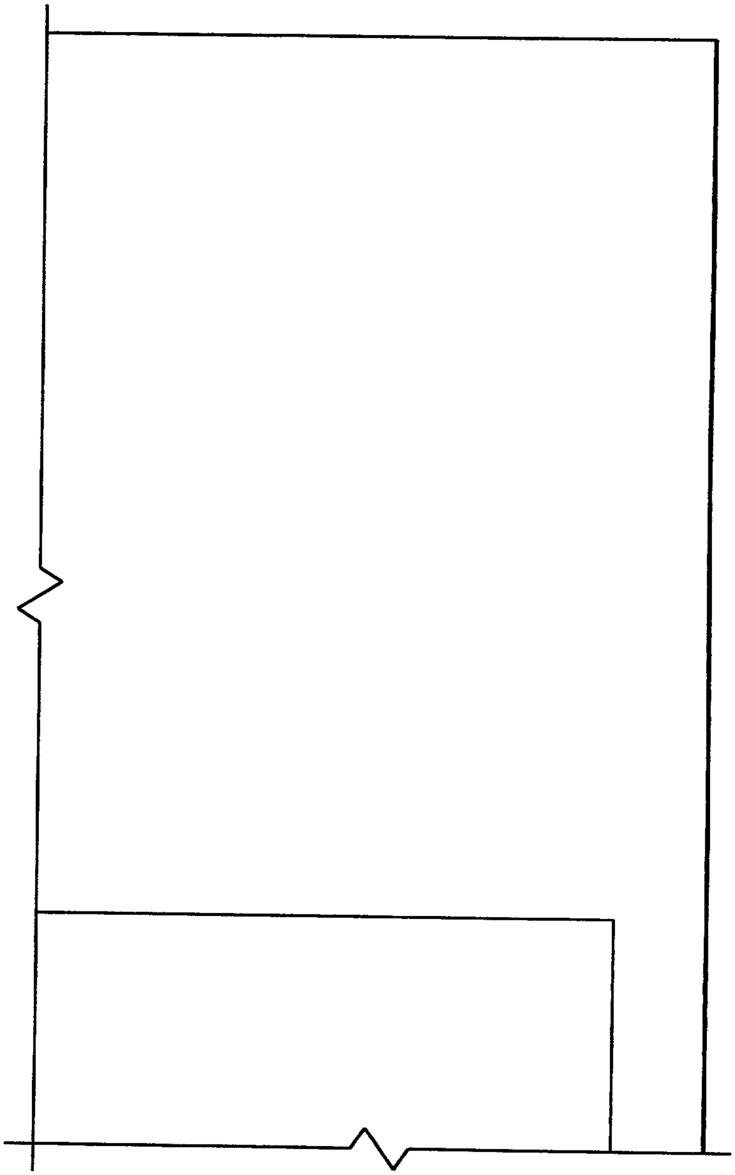


Fig 9.02AK

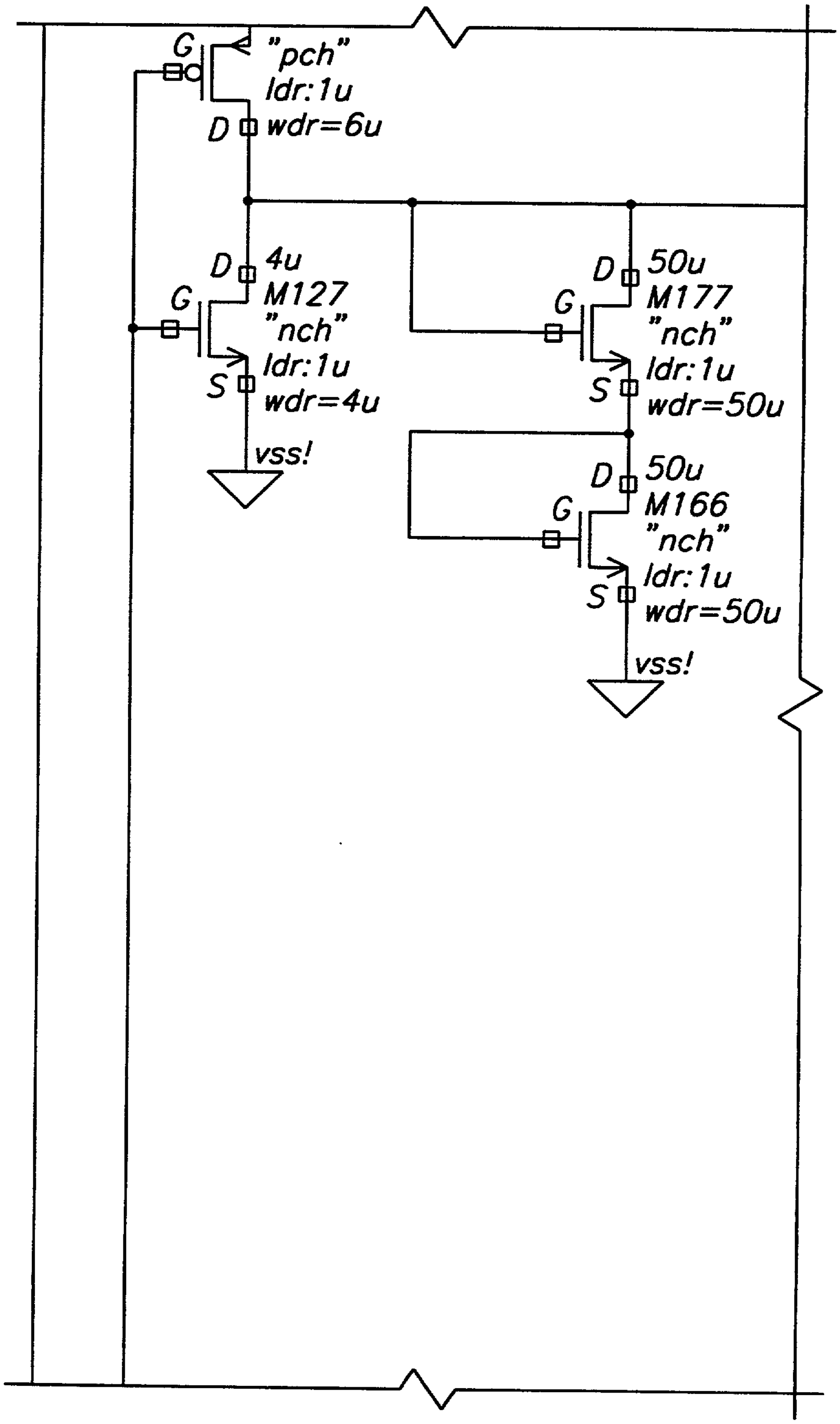

G
"pch"
ldr:1u
D
wdr=6u
D
4u
G
M127
"nch"
ldr:1u
S
wdr=4u
vss!
D
50u
G
M177
"nch"
ldr:1u
S
wdr=50u
D
50u
G
M166
"nch"
ldr:1u
S
wdr=50u
vss!

Fig 9.02BA

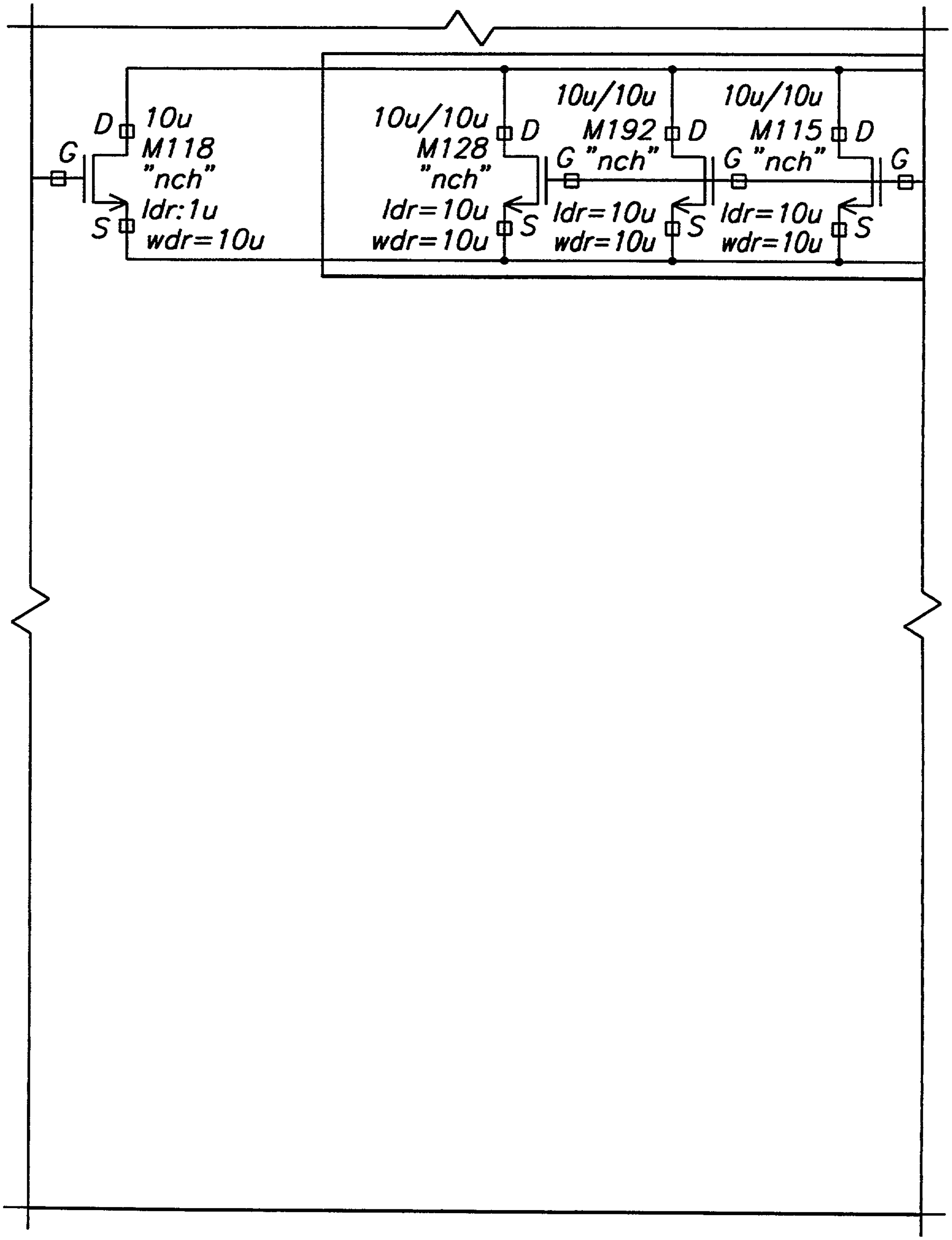

G
D
S
10u
M118
"nch"
ldr:1u
wdr=10u
10u/10u
M128
"nch"
ldr=10u
wdr=10u
D
S
G
10u/10u
M192
"nch"
ldr=10u
wdr=10u
D
S
G
10u/10u
M115
"nch"
ldr=10u
wdr=10u
D
S
G

Fig 9.02BB

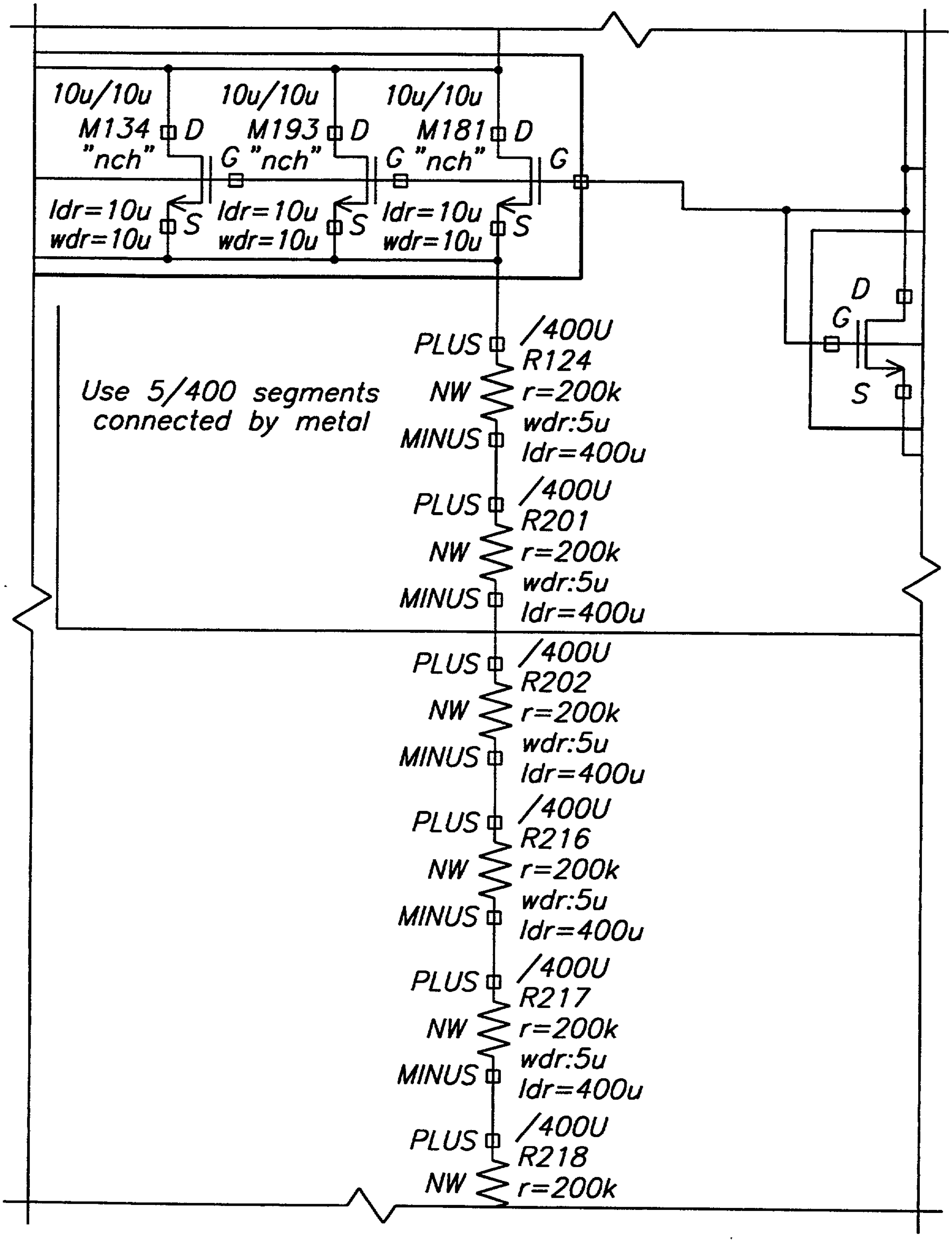

10u/10u
M134
"nch"
D
G
S
ldr=10u
wdr=10u
10u/10u
M193
"nch"
D
G
S
ldr=10u
wdr=10u
10u/10u
M181
"nch"
D
G
S
ldr=10u
wdr=10u
D
G
S
Use 5/400 segments
connected by metal
PLUS
NW
MINUS
/400U
R124
r=200k
wdr:5u
ldr=400u
PLUS
NW
MINUS
/400U
R201
r=200k
wdr:5u
ldr=400u
PLUS
NW
MINUS
/400U
R202
r=200k
wdr:5u
ldr=400u
PLUS
NW
MINUS
/400U
R216
r=200k
wdr:5u
ldr=400u
PLUS
NW
MINUS
/400U
R217
r=200k
wdr:5u
ldr=400u
PLUS
NW
/400U
R218
r=200k

Fig 9.02BC

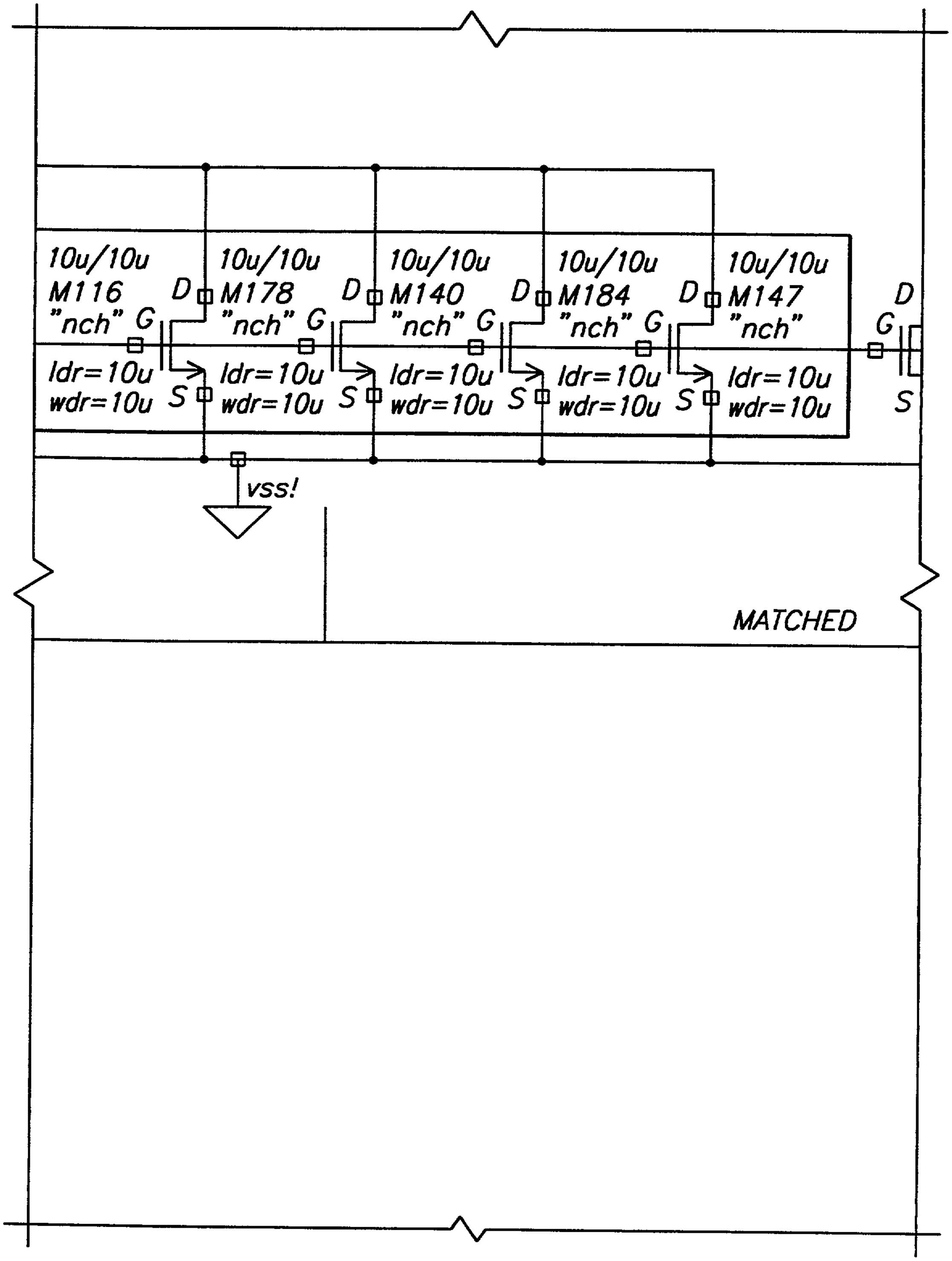

10u/10u
M116
"nch"
D
G
S
ldr=10u
wdr=10u
10u/10u
M178
"nch"
D
G
S
ldr=10u
wdr=10u
10u/10u
M140
"nch"
D
G
S
ldr=10u
wdr=10u
10u/10u
M184
"nch"
D
G
S
ldr=10u
wdr=10u
10u/10u
M147
"nch"
D
G
S
ldr=10u
wdr=10u
D
G
S
vss!
MATCHED

Fig 9.02BD

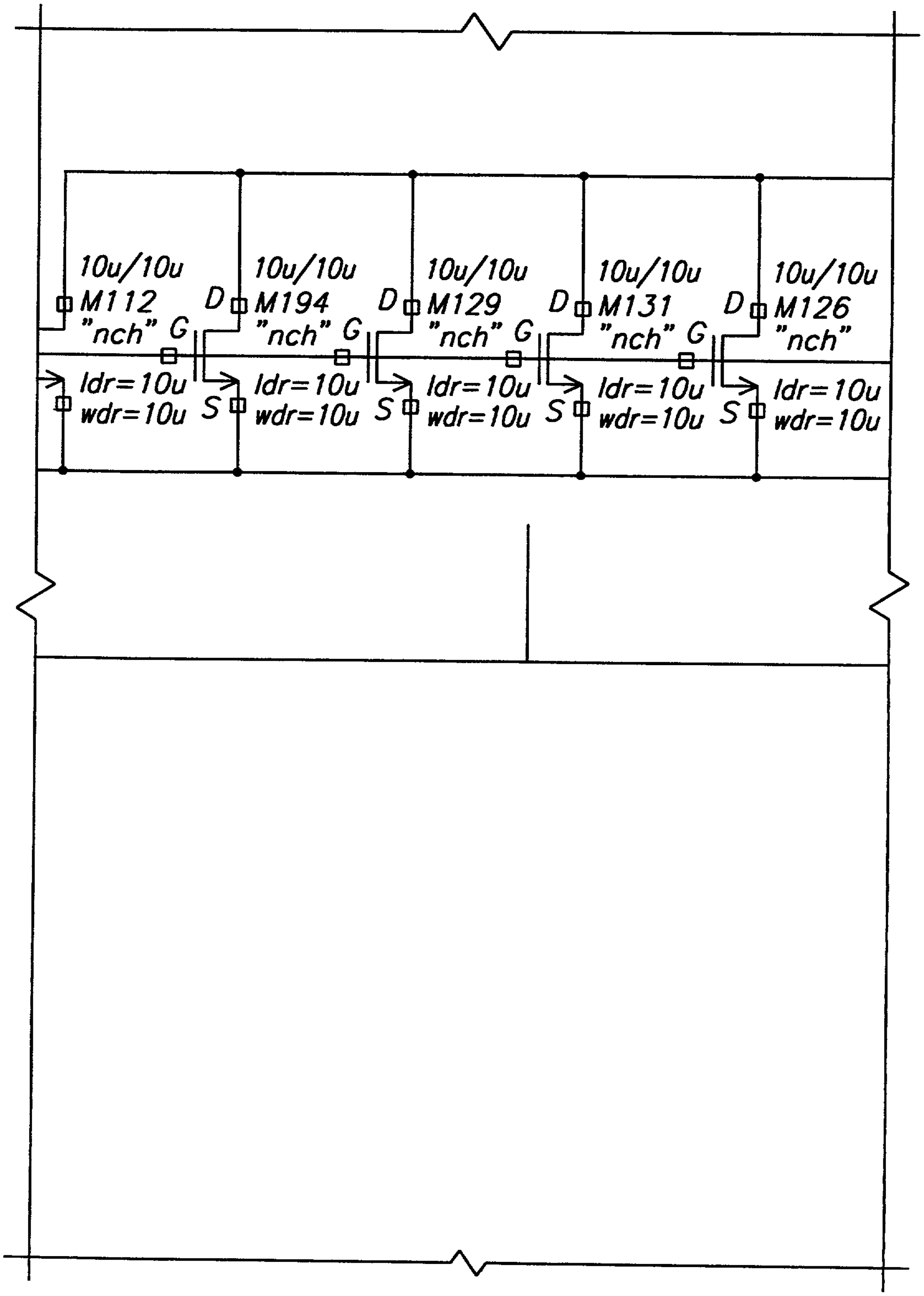

10u/10u
M112
"nch"
ldr=10u
wdr=10u
D
G
S
10u/10u
M194
"nch"
ldr=10u
wdr=10u
D
G
S
10u/10u
M129
"nch"
ldr=10u
wdr=10u
D
G
S
10u/10u
M131
"nch"
ldr=10u
wdr=10u
D
G
S
10u/10u
M126
"nch"
ldr=10u
wdr=10u

Fig 9.02BE

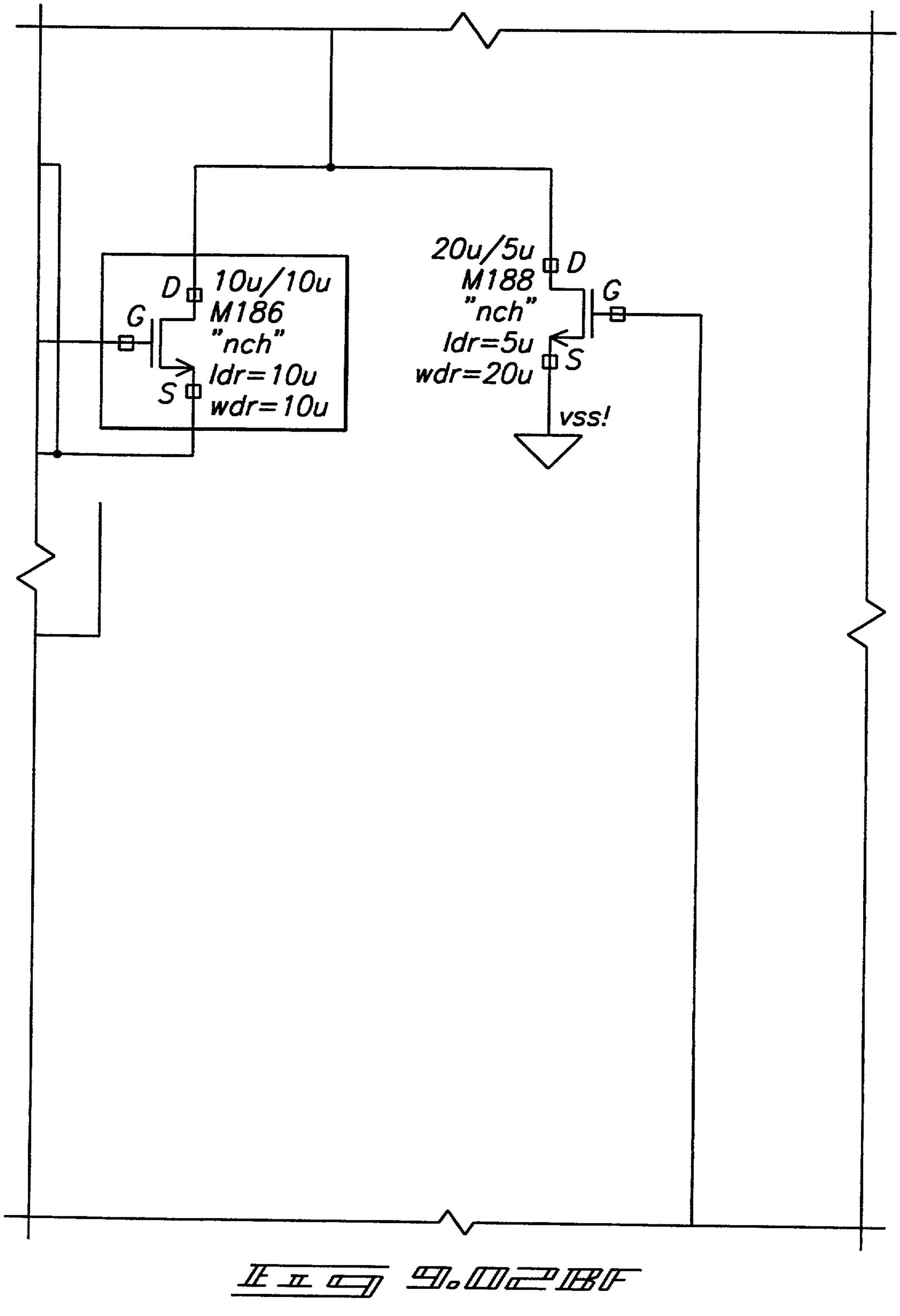

10u/10u
M186
"nch"
ldr=10u
wdr=10u
D
G
S
20u/5u
M188
"nch"
ldr=5u
wdr=20u
D
G
S
vss!

FIG 9.02BF

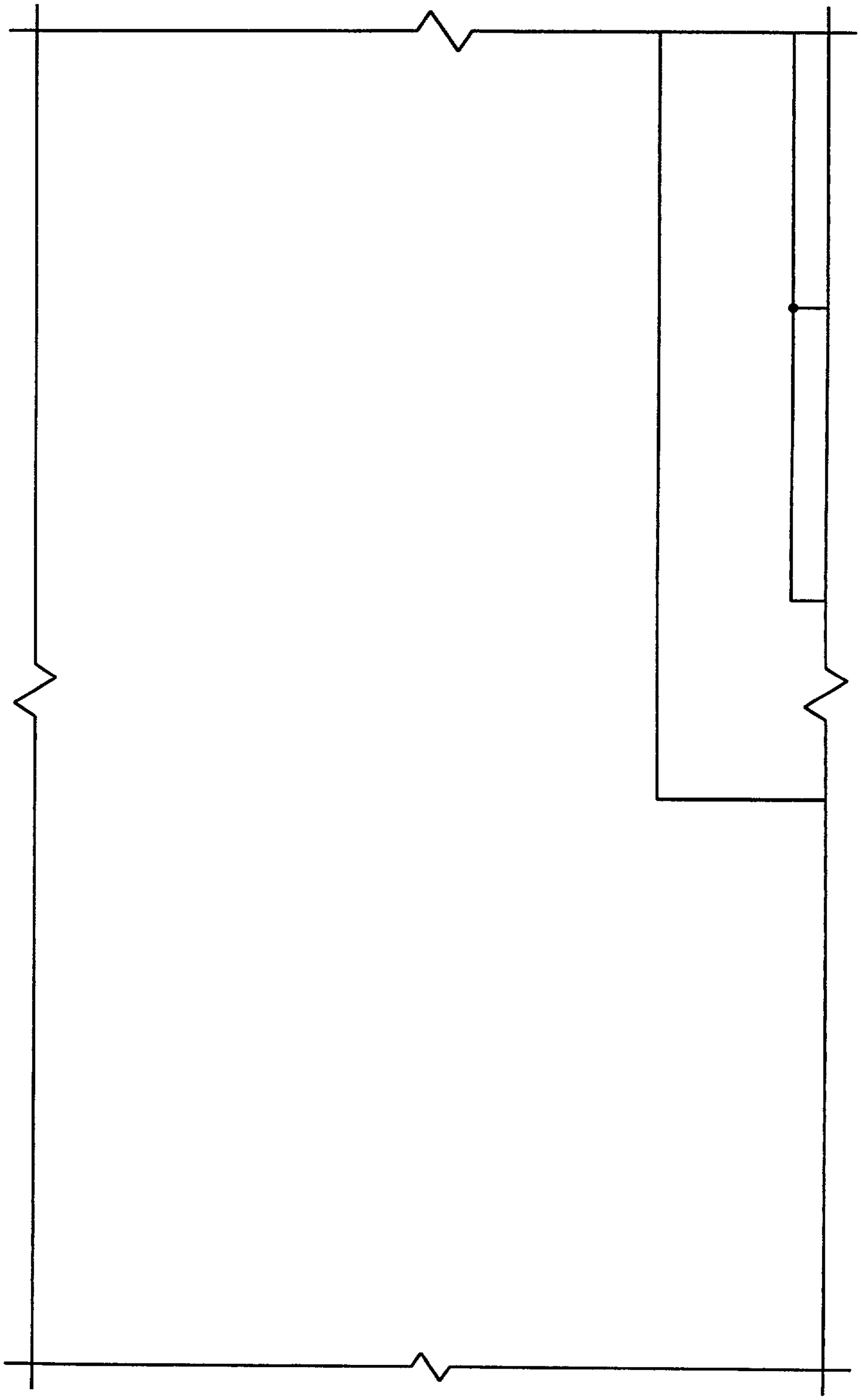


FIG 9.02BG

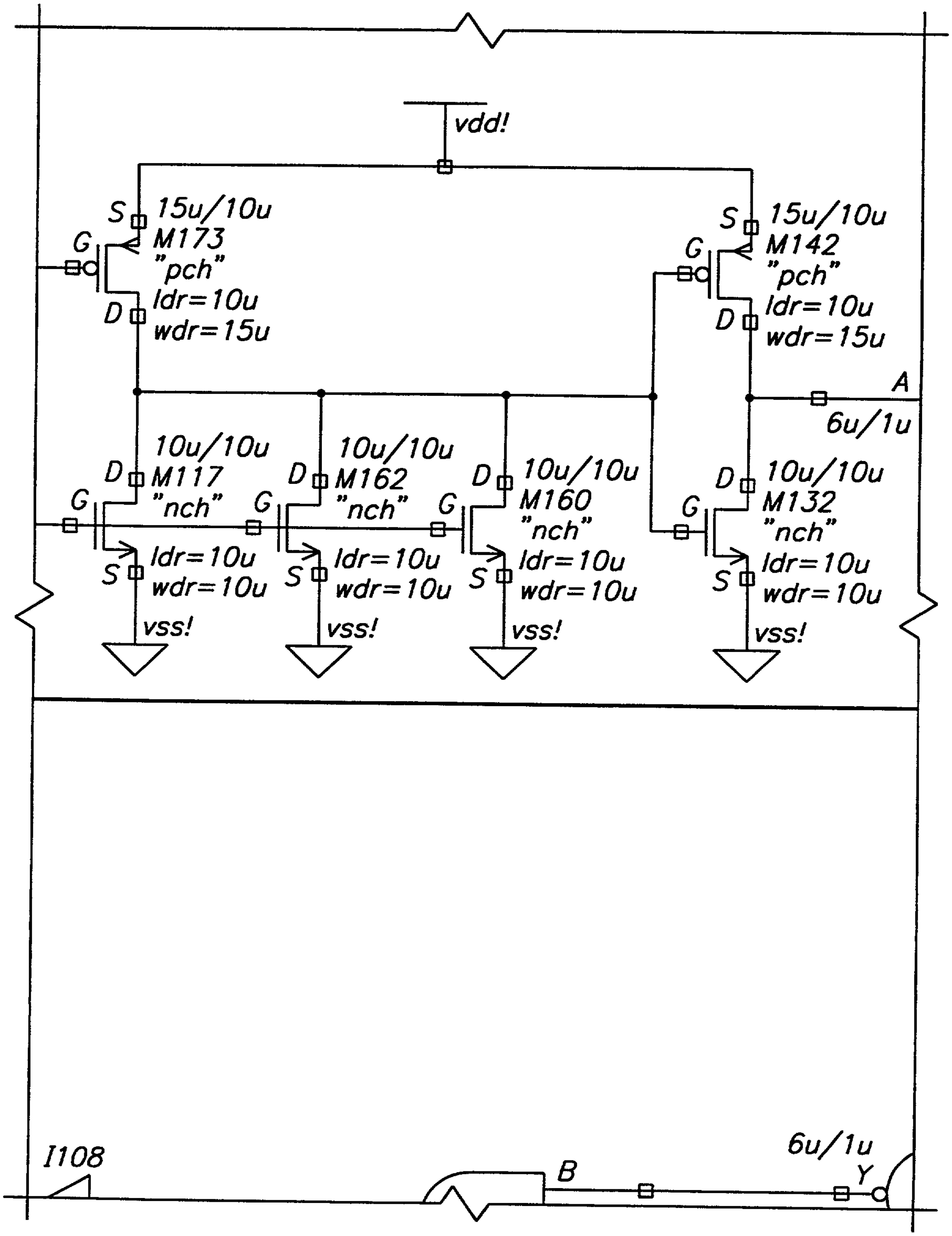

vdd!
S
15u/10u
M173
"pch"
G
D
ldr=10u
wdr=15u
S
15u/10u
M142
"pch"
G
D
ldr=10u
wdr=15u
A
6u/1u
D
10u/10u
M117
"nch"
G
S
ldr=10u
wdr=10u
vss!
D
10u/10u
M162
"nch"
G
S
ldr=10u
wdr=10u
vss!
D
10u/10u
M160
"nch"
G
S
ldr=10u
wdr=10u
vss!
D
10u/10u
M132
"nch"
G
S
ldr=10u
wdr=10u
vss!
I108
B
6u/1u
Y

Fig 9.02BH

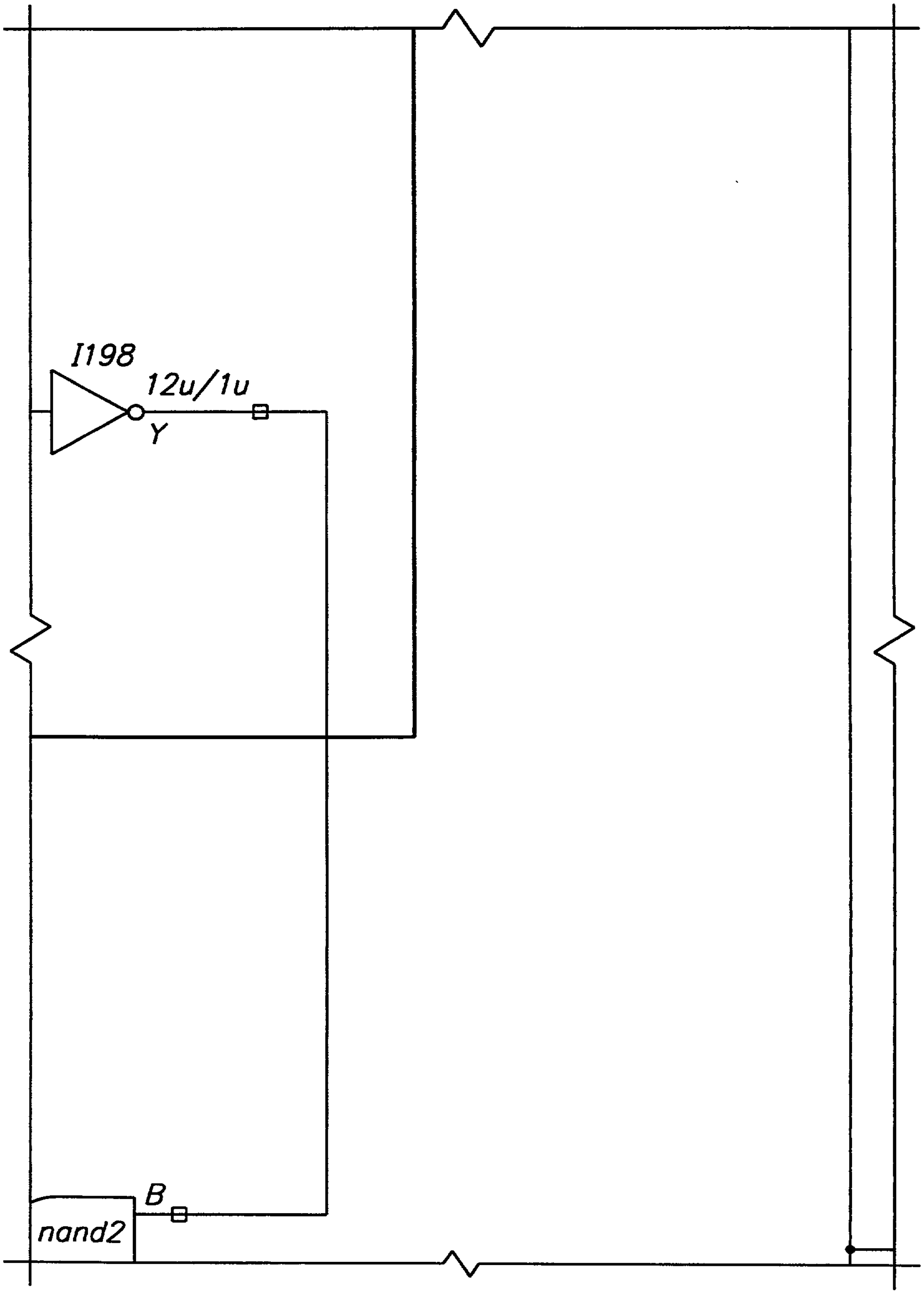


Fig 9.02BI

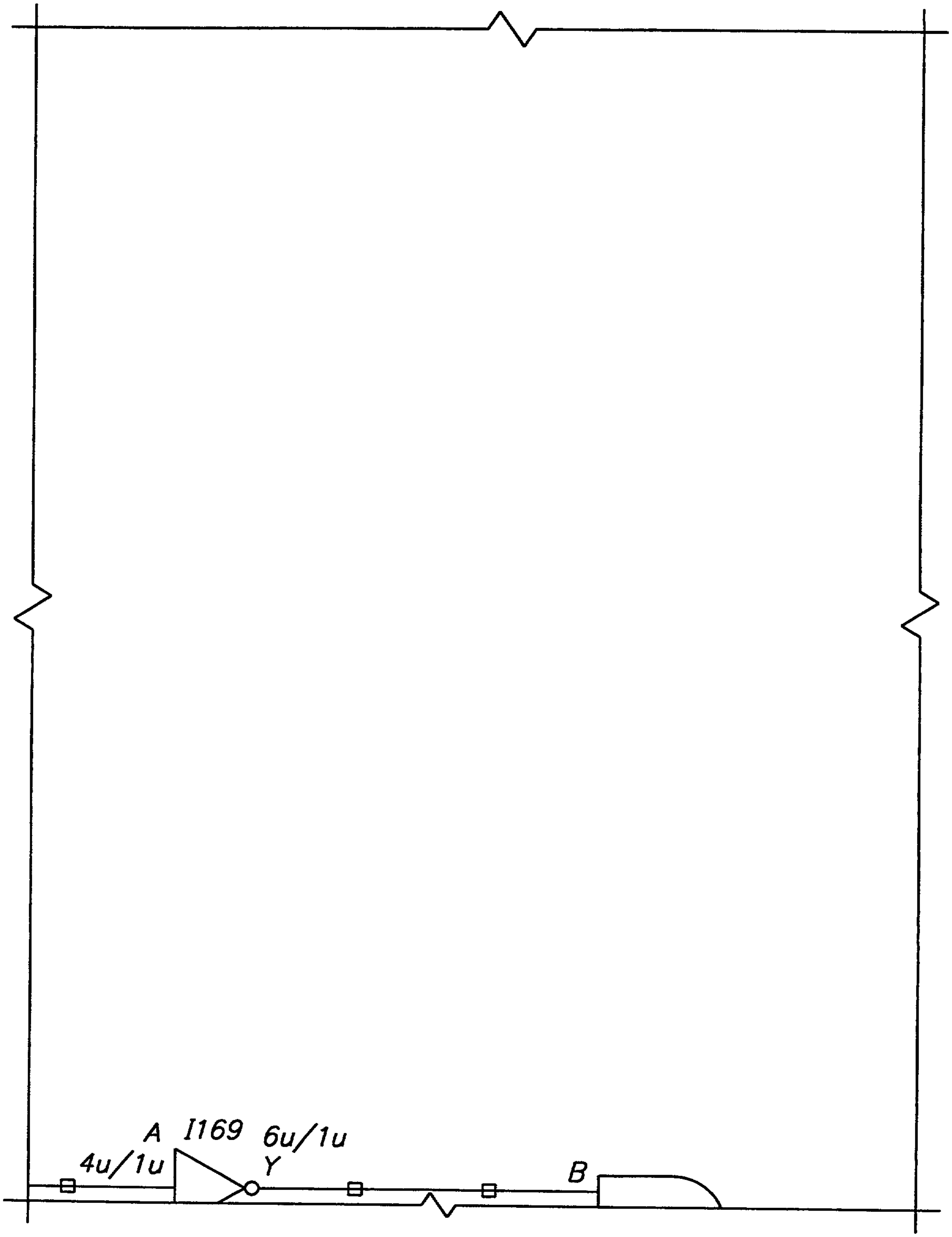


Fig 9.02Bd

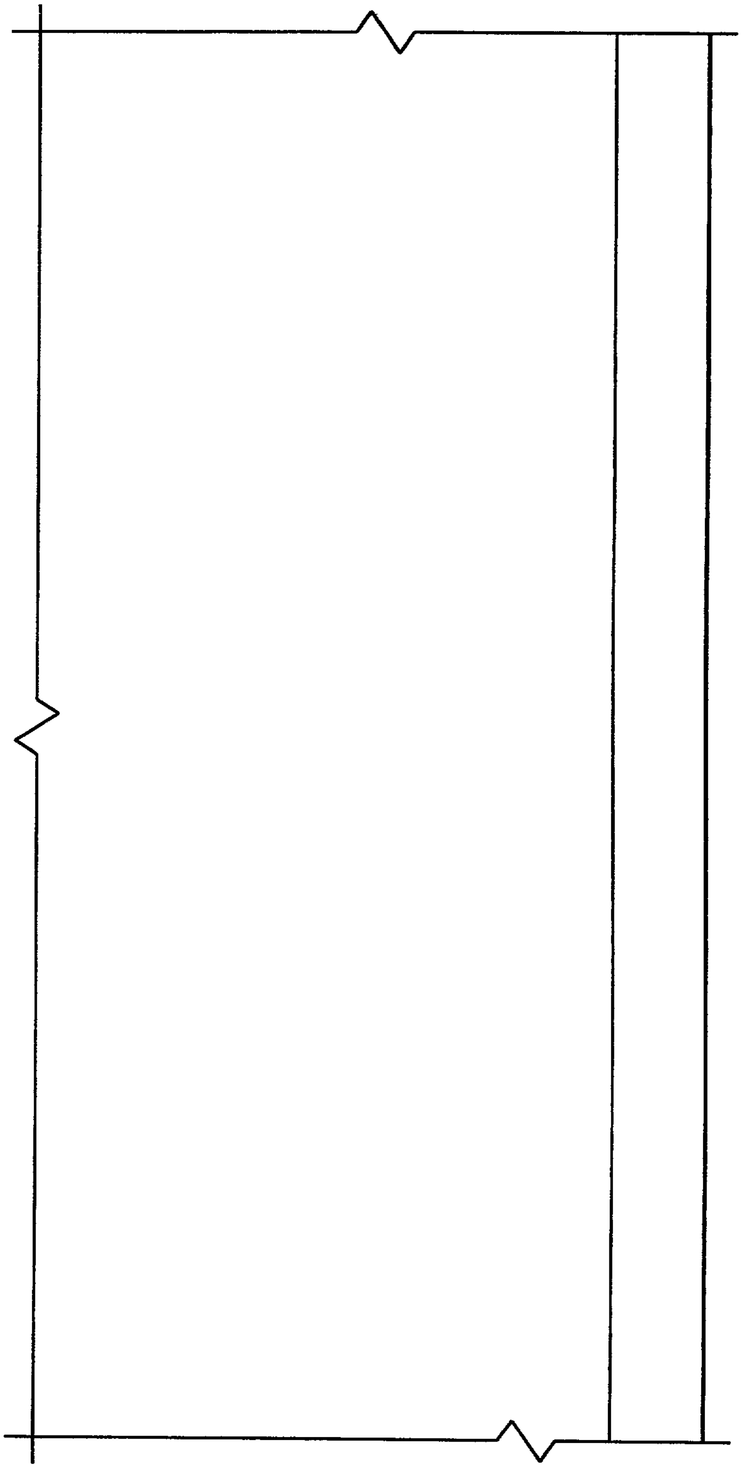


Fig 9.02BK

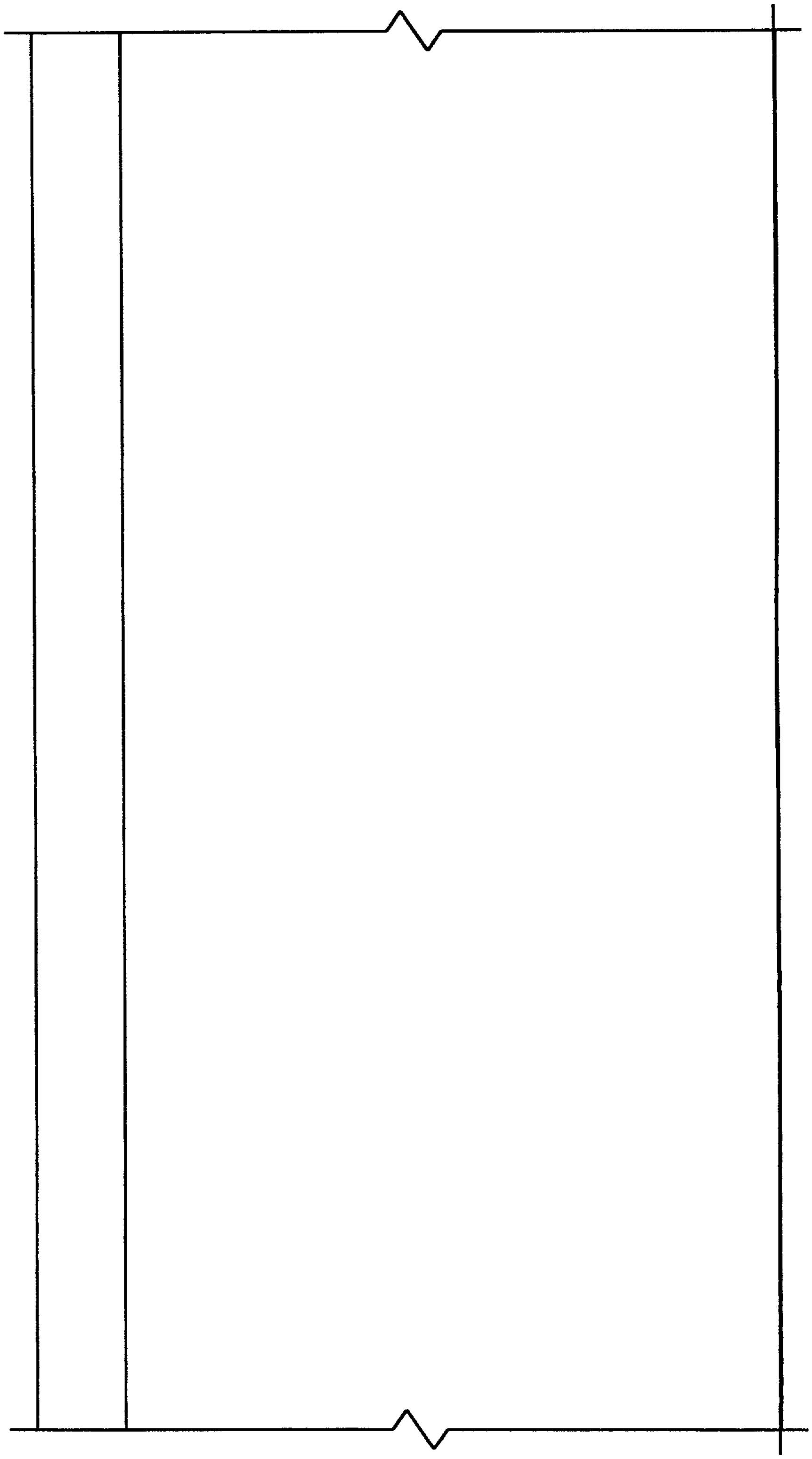


Fig 9.02CA

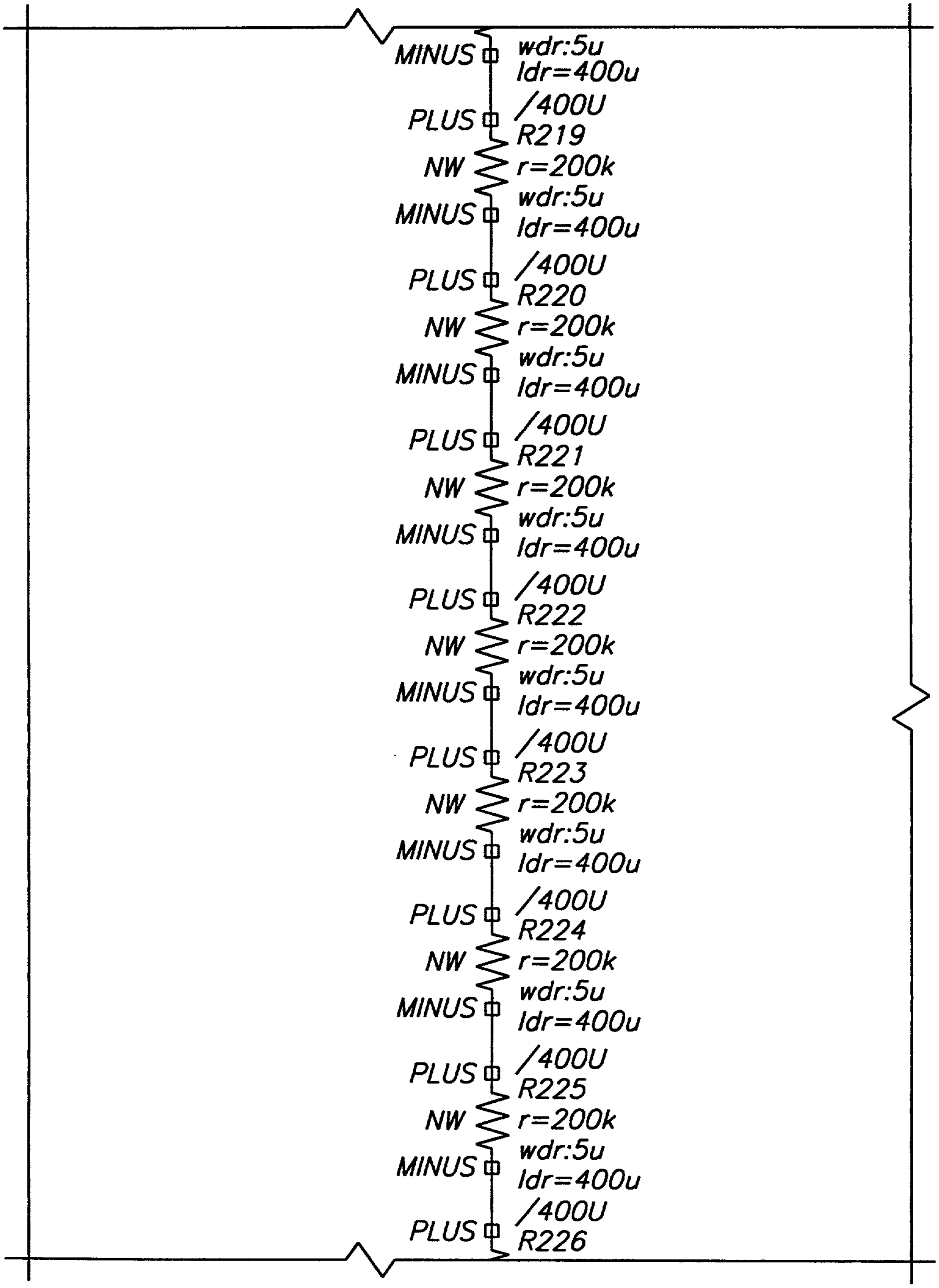

MINUS
wdr:5u
ldr=400u
PLUS
/400U
R219
NW
r=200k
MINUS
wdr:5u
ldr=400u
PLUS
/400U
R220
NW
r=200k
MINUS
wdr:5u
ldr=400u
PLUS
/400U
R221
NW
r=200k
MINUS
wdr:5u
ldr=400u
PLUS
/400U
R222
NW
r=200k
MINUS
wdr:5u
ldr=400u
PLUS
/400U
R223
NW
r=200k
MINUS
wdr:5u
ldr=400u
PLUS
/400U
R224
NW
r=200k
MINUS
wdr:5u
ldr=400u
PLUS
/400U
R225
NW
r=200k
MINUS
wdr:5u
ldr=400u
PLUS
/400U
R226

Fig 9.02CC

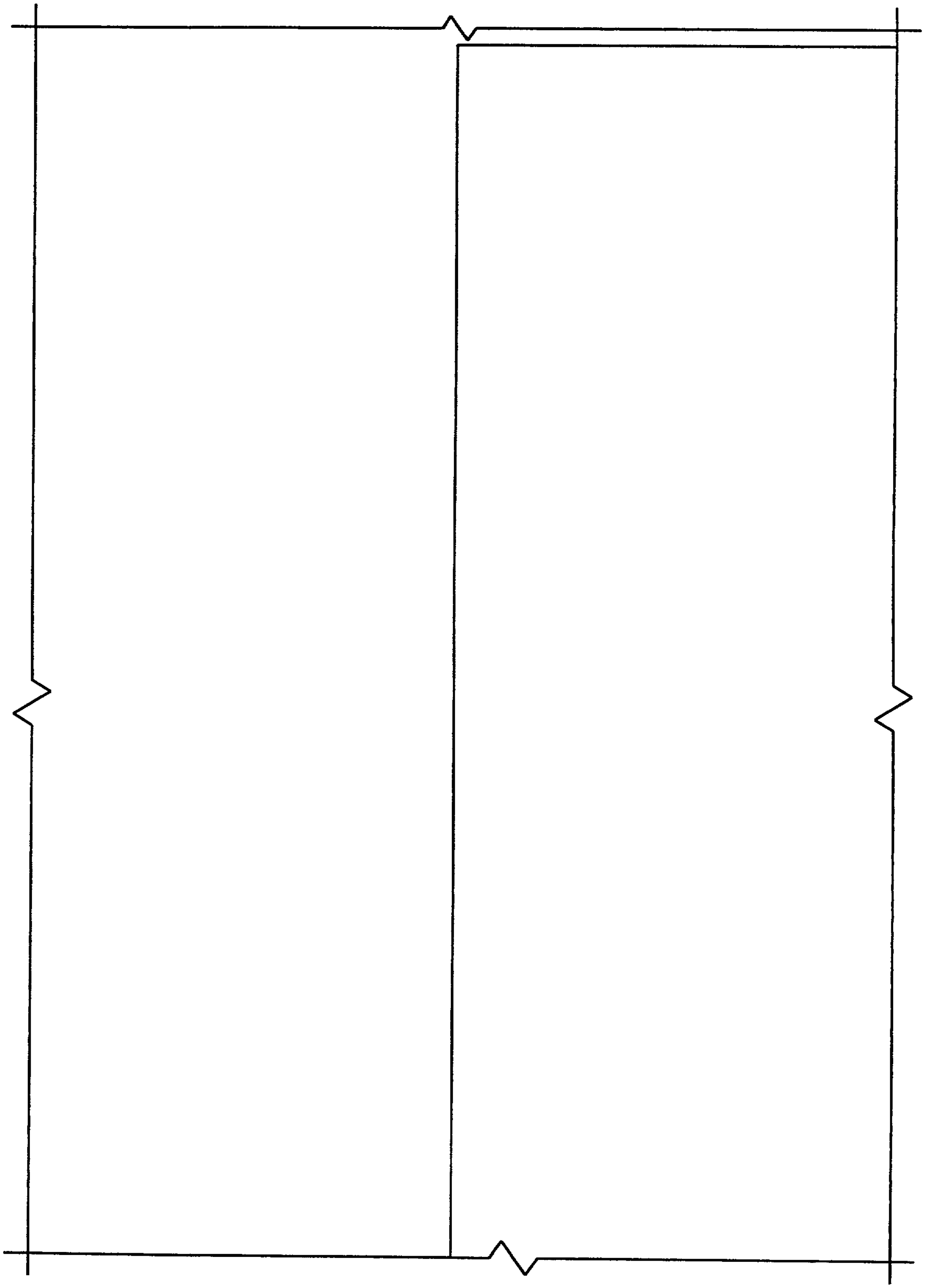


Fig. 9.02CD

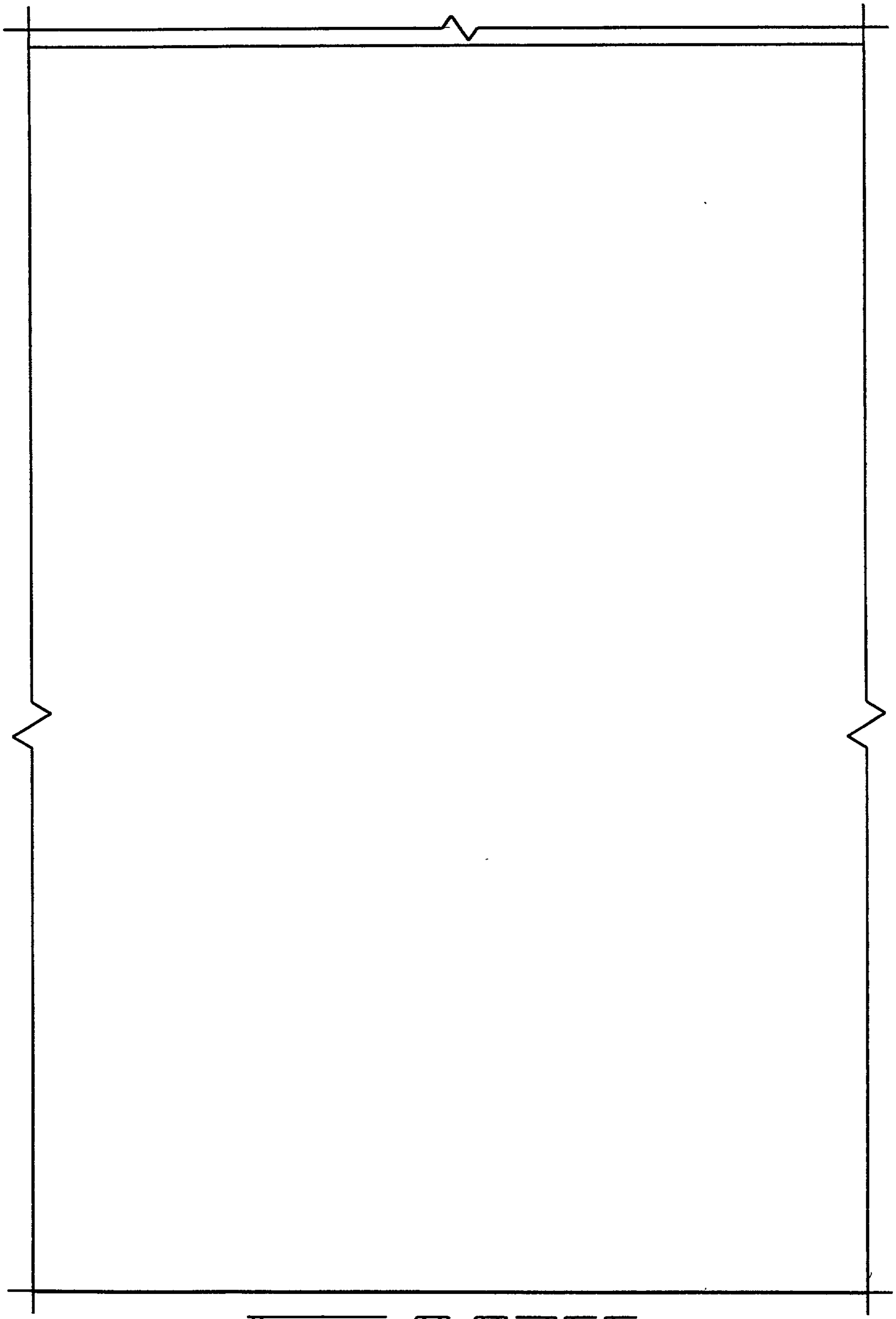


Fig 9.02CE

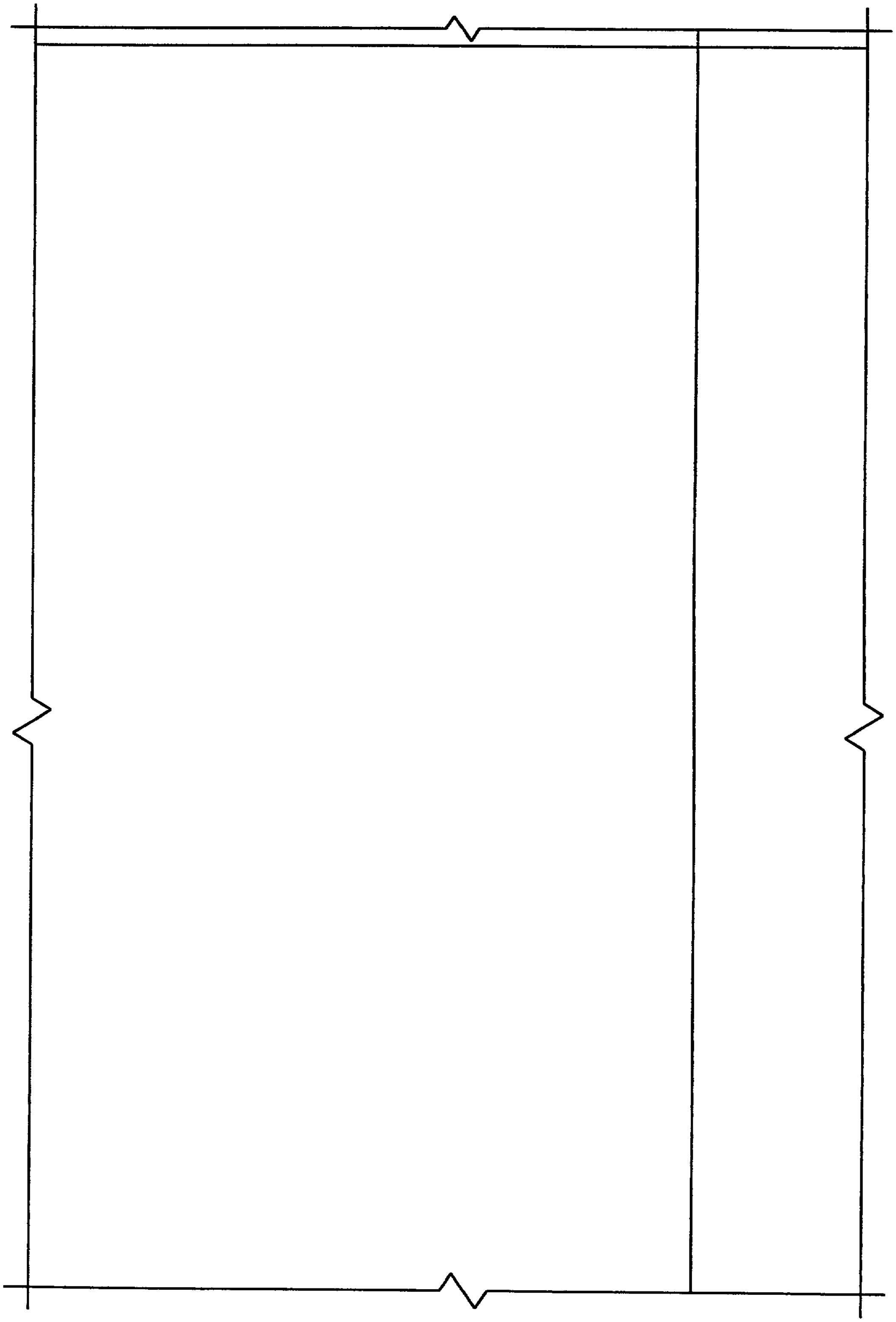


FIG 9.02CF

2437/3273

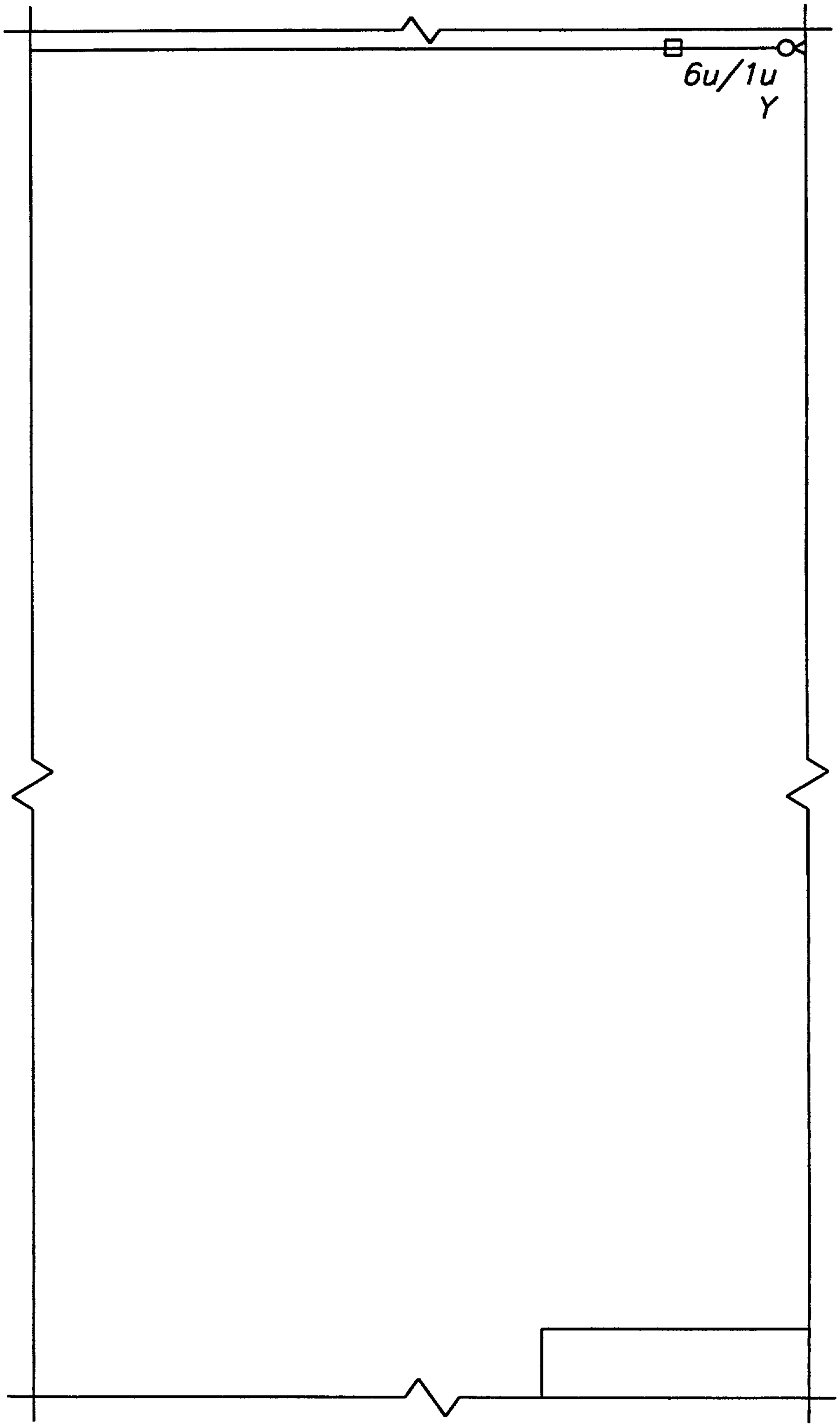


Fig 9.02CG

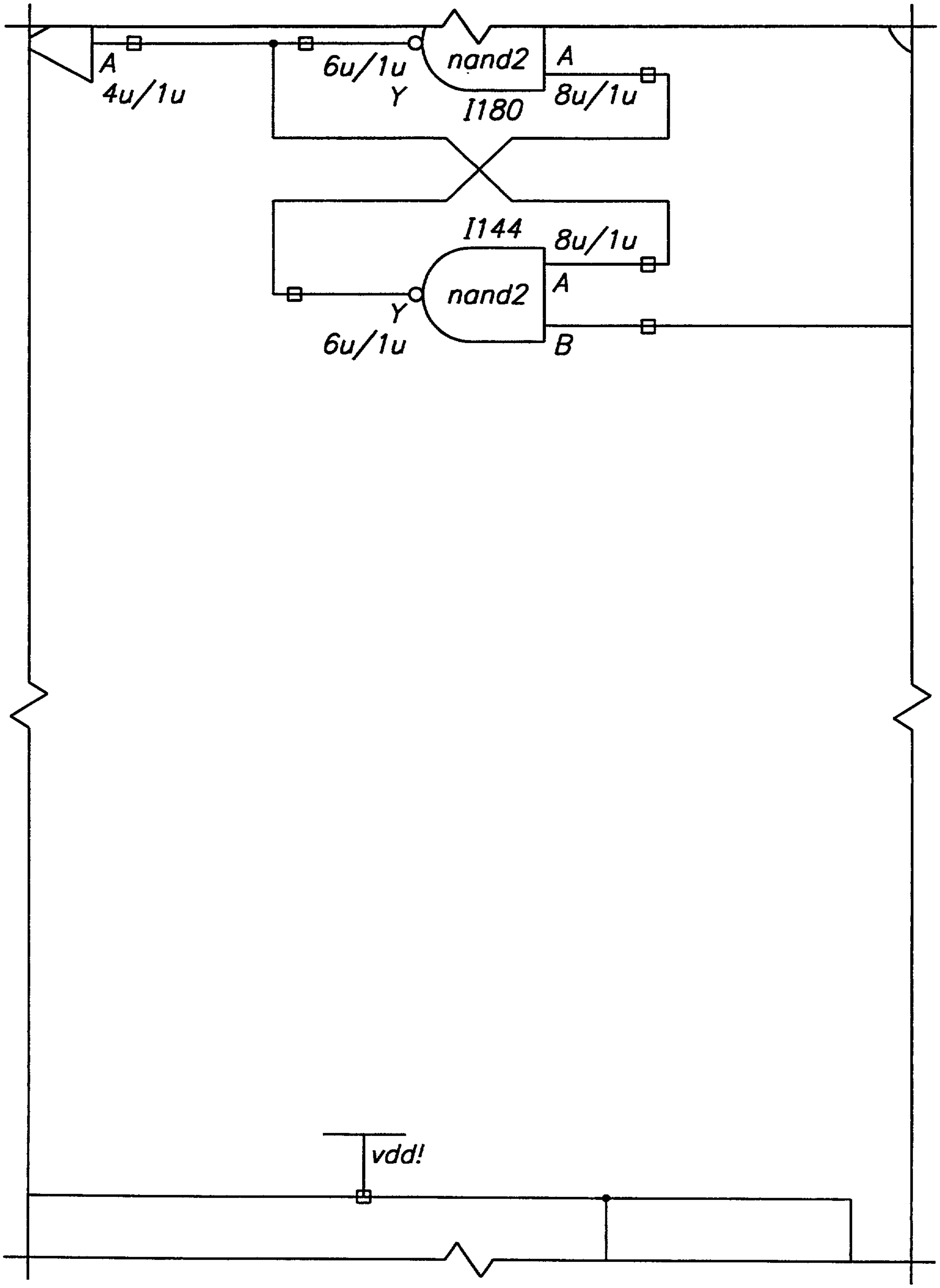


Fig 9.02CH

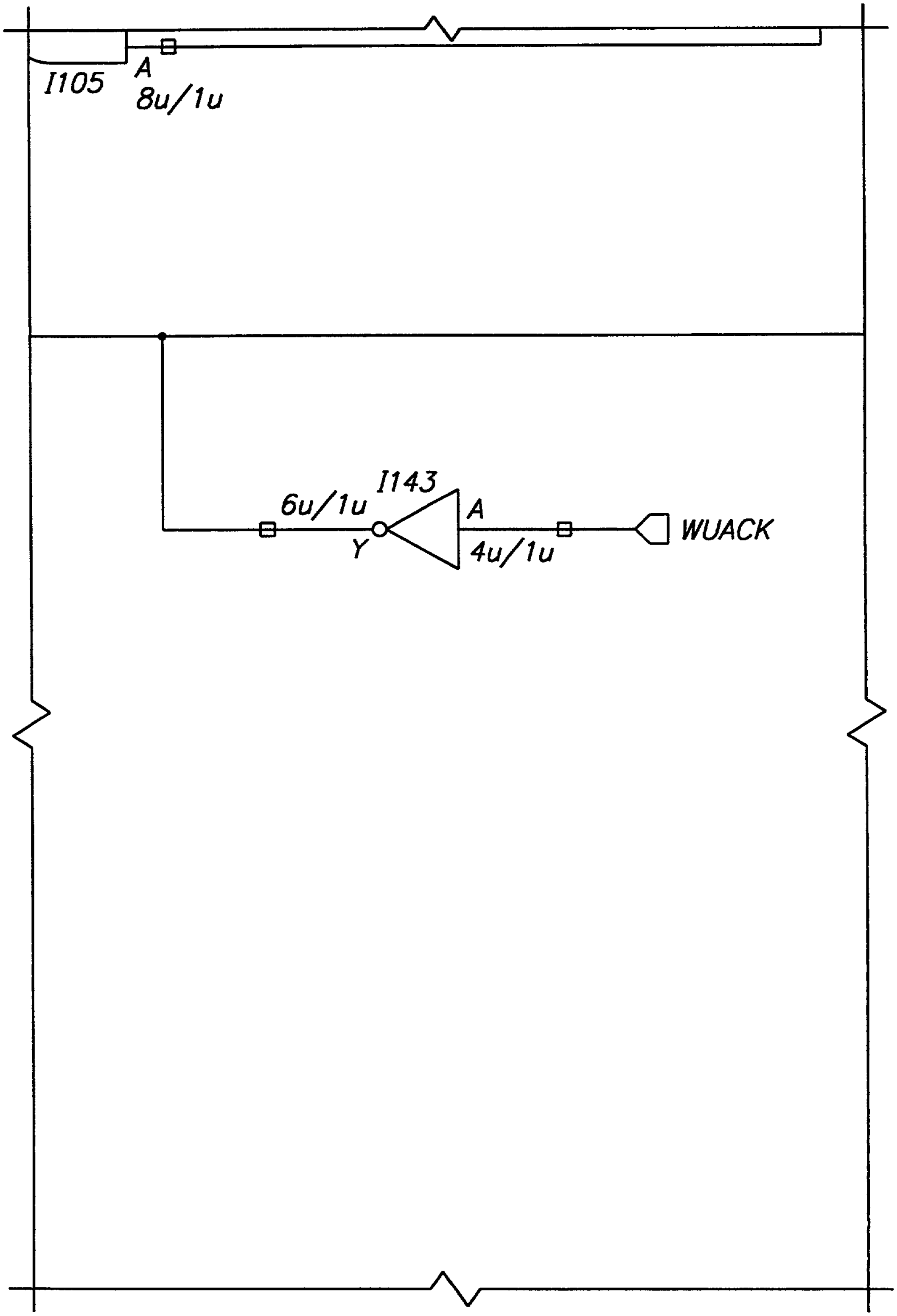


Fig 9.02CI

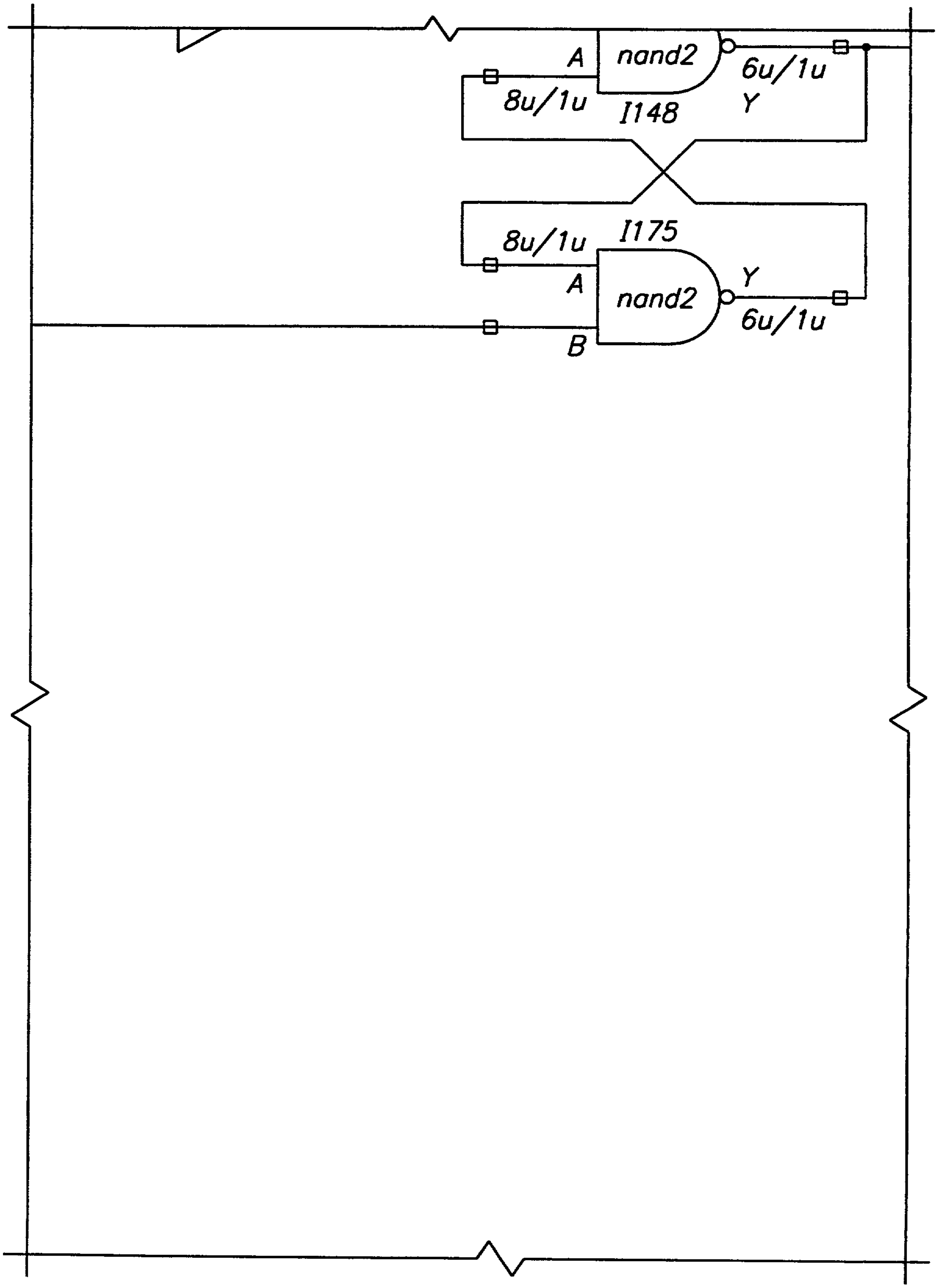


Fig 9.02CJ

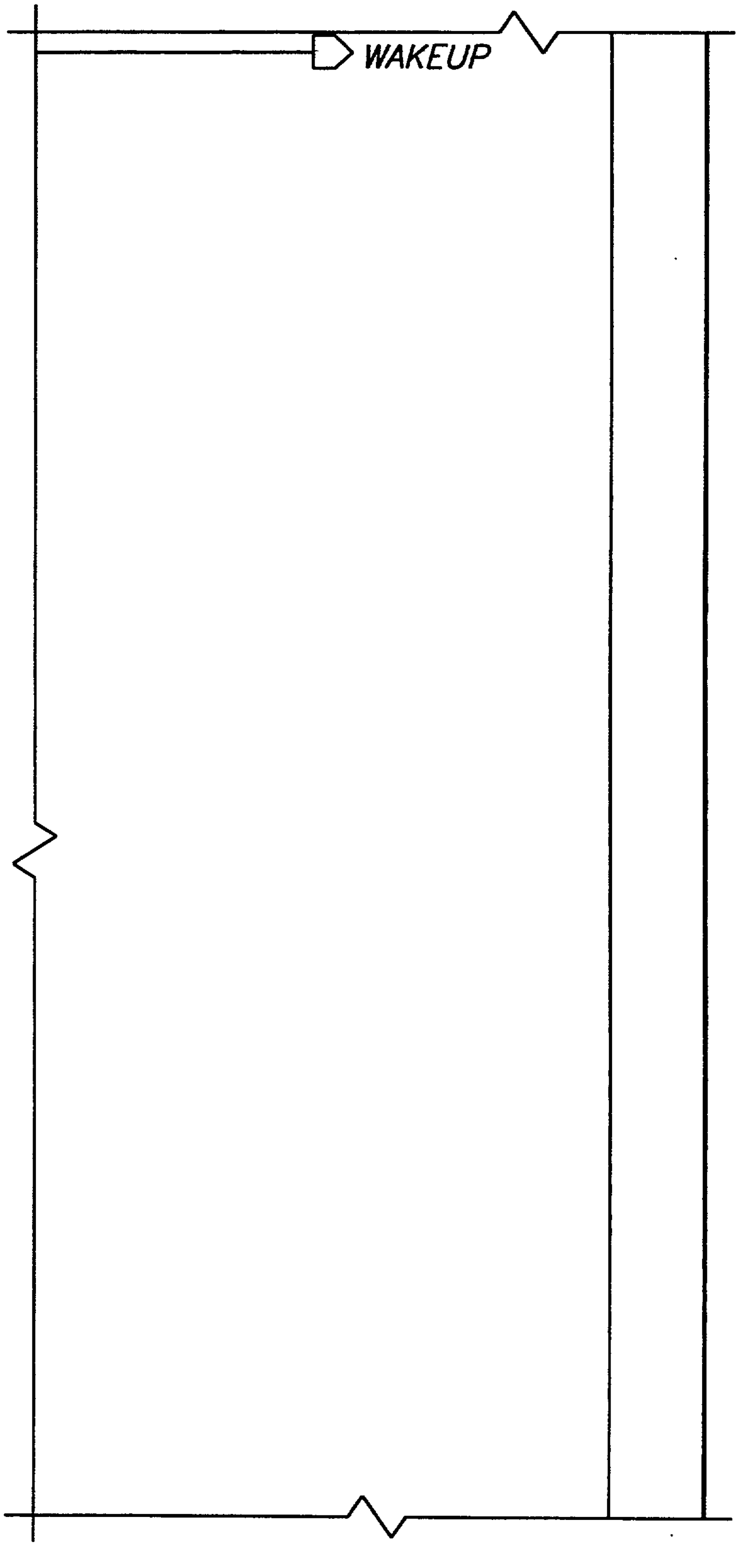


FIG 9.02CK

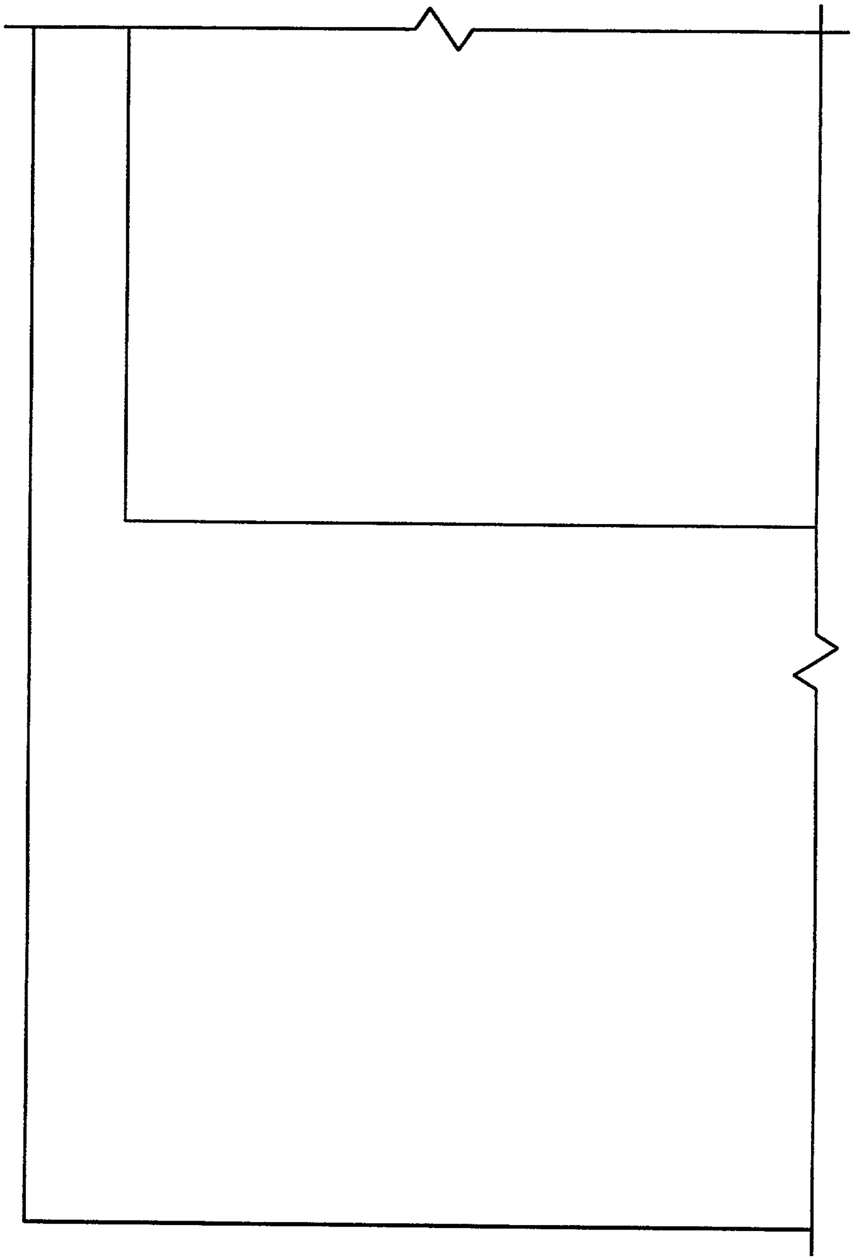


Fig 9.02DA

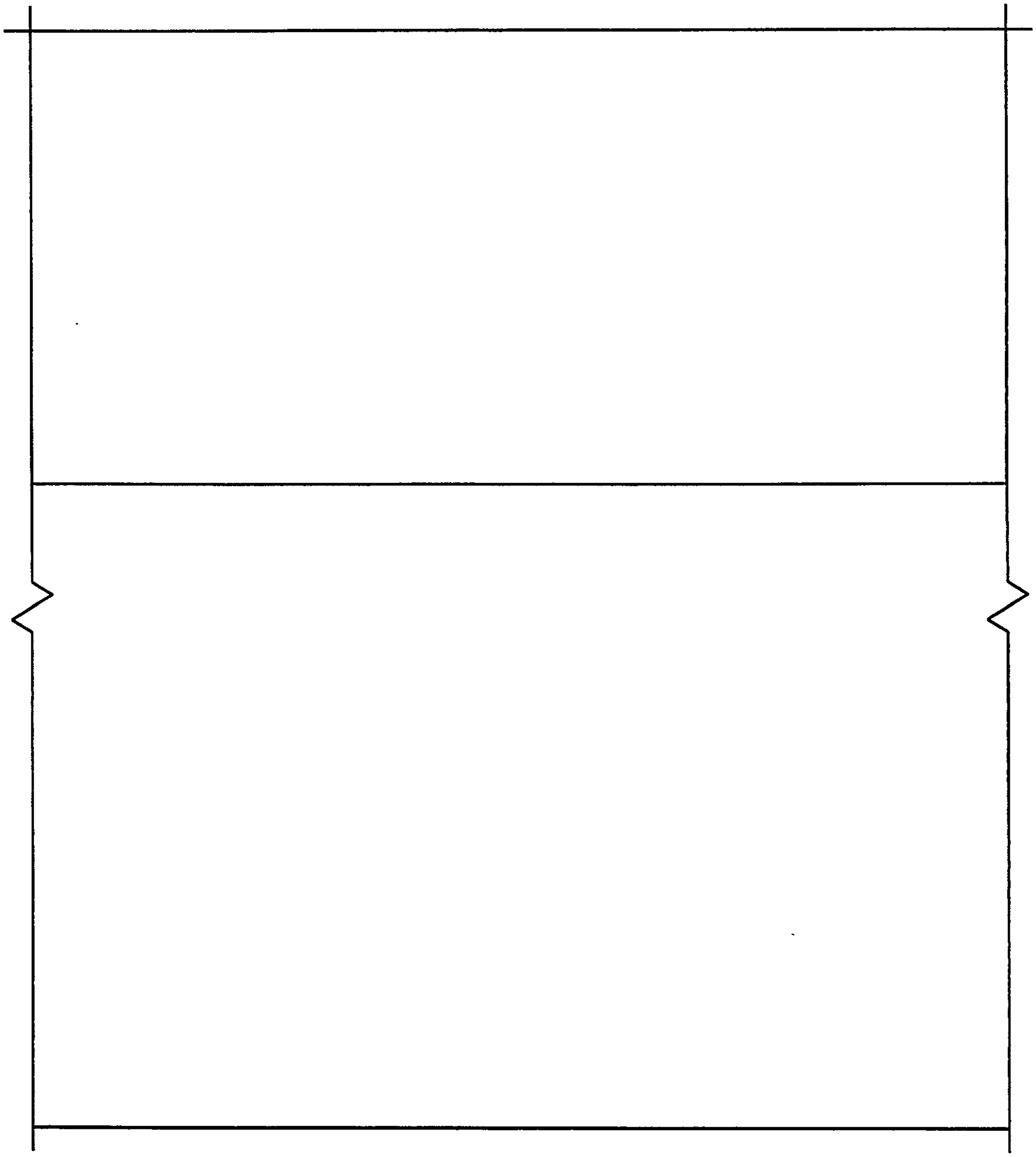


Fig 9.02DB

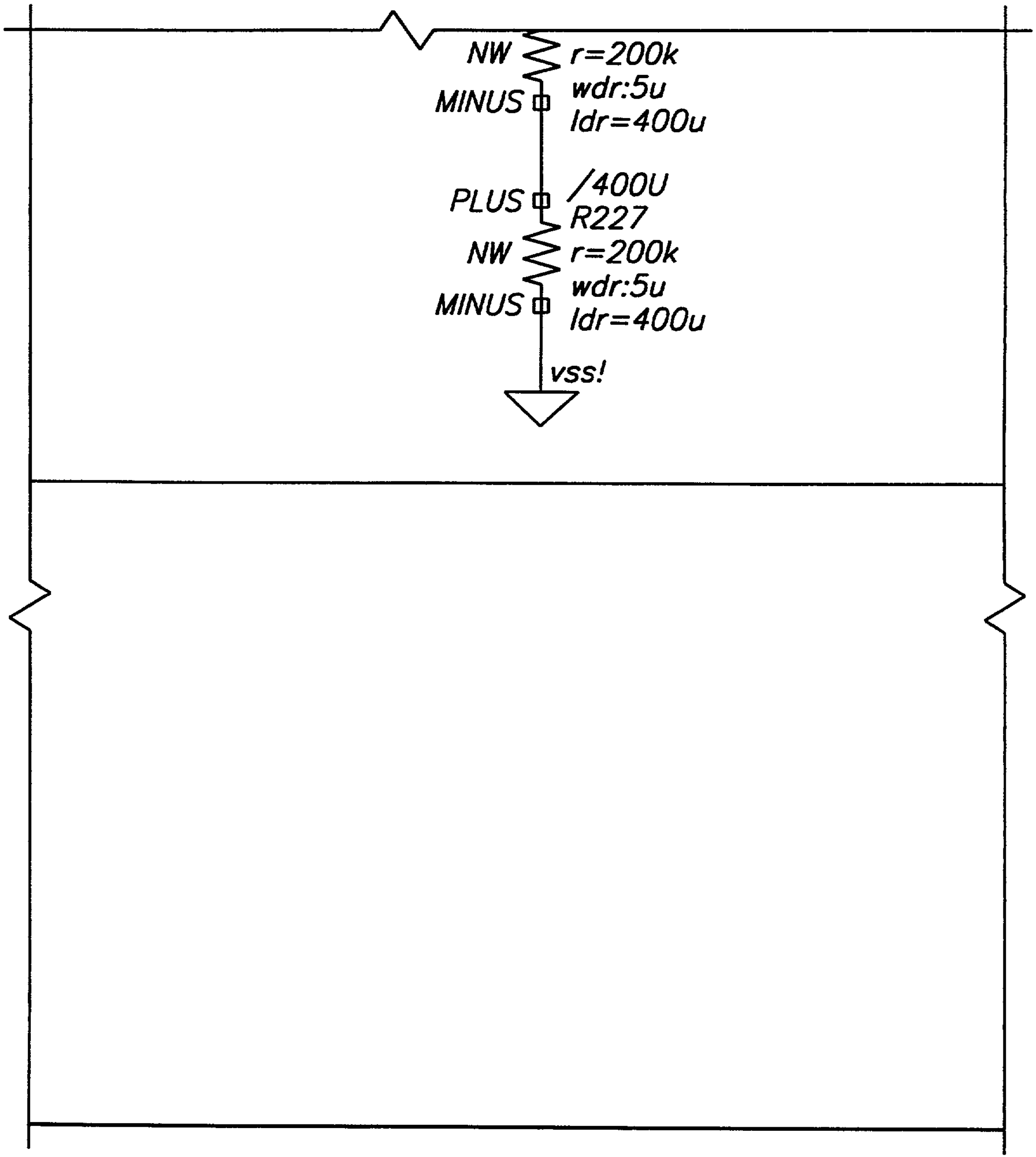

NW
r=200k
wdr:5u
MINUS
ldr=400u
/400U
PLUS
R227
NW
r=200k
wdr:5u
MINUS
ldr=400u
vss!

Fig 9.02DC

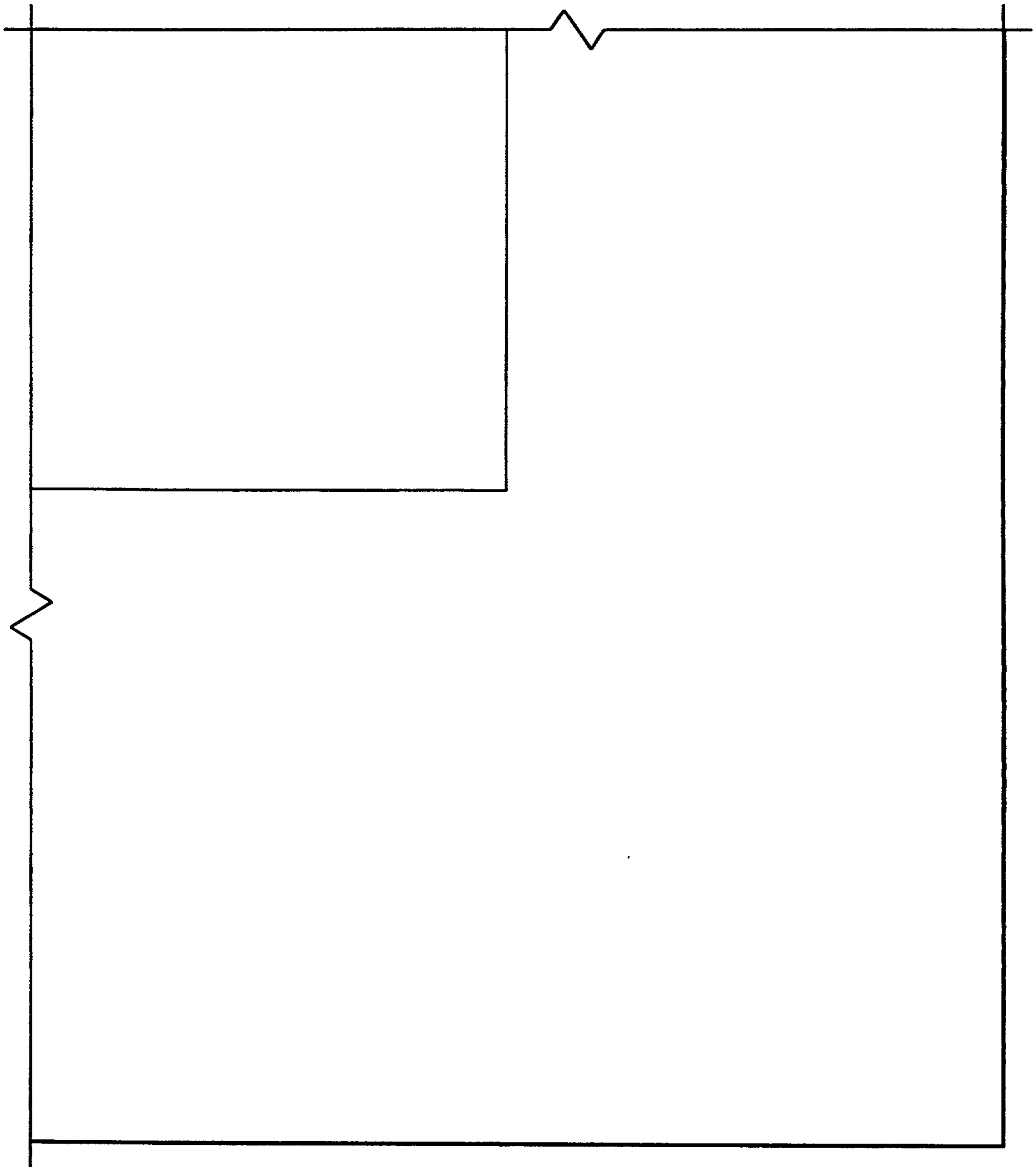


Fig 9.02DD

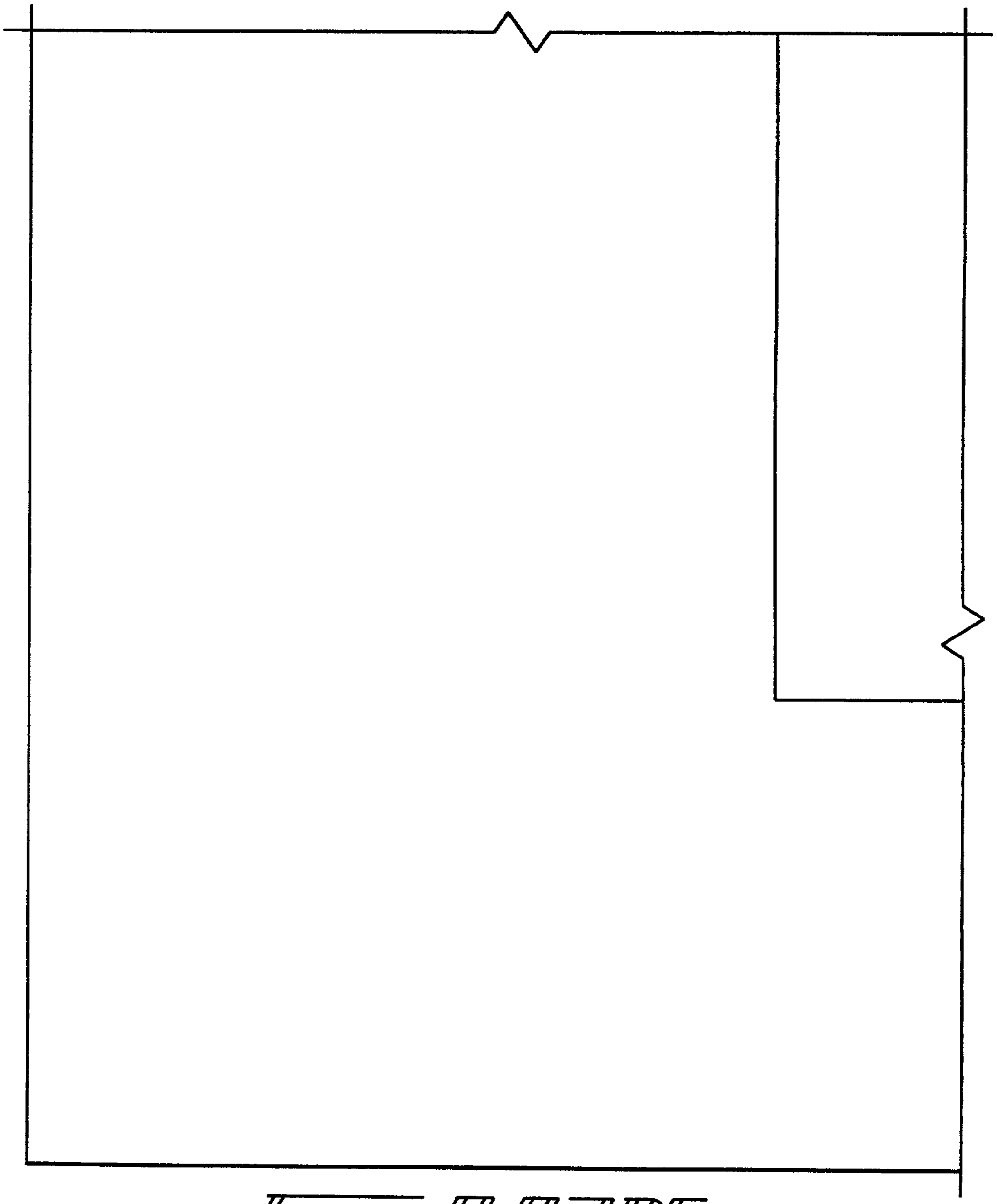


Fig 9.02DF

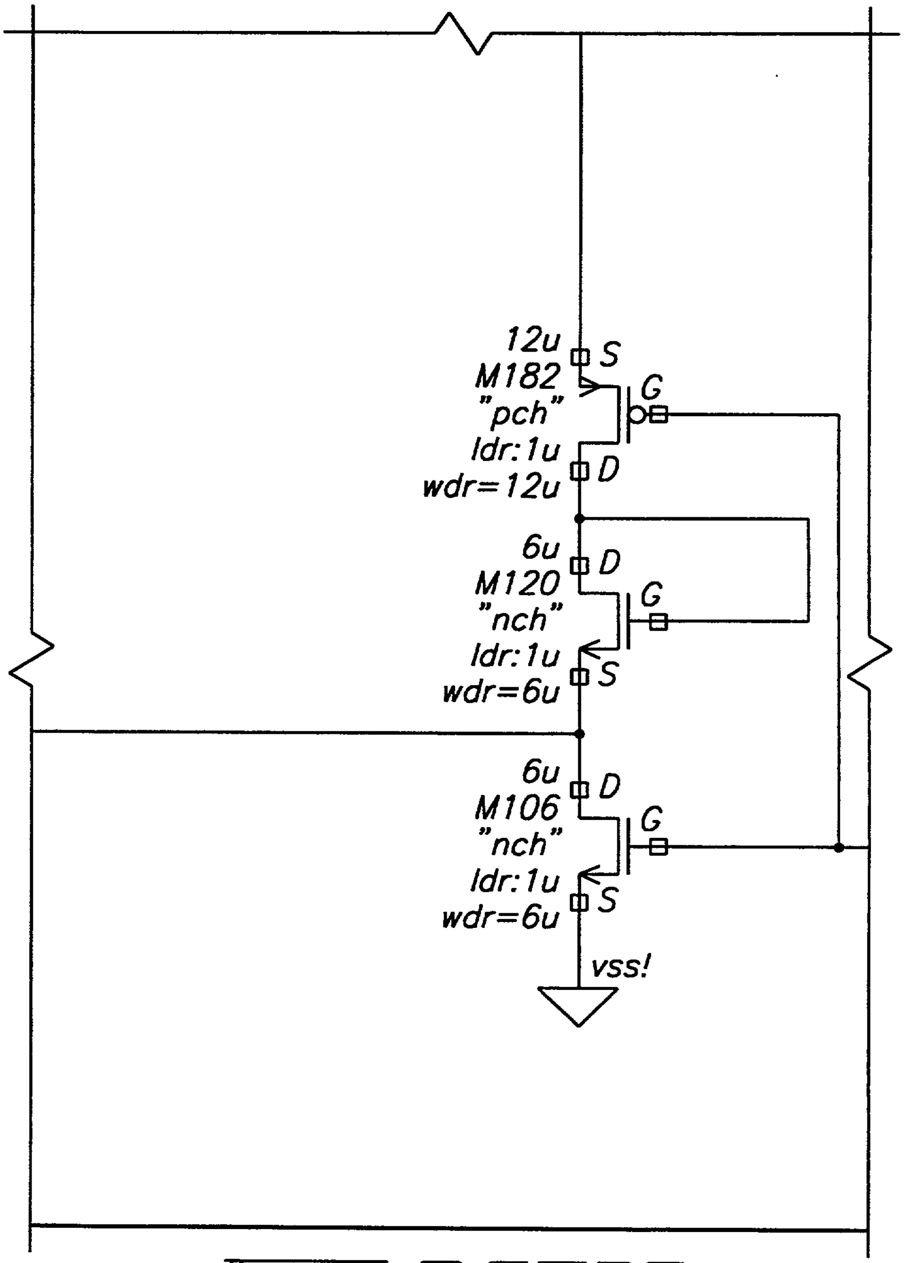

12u
S
M182
"pch"
G
ldr:1u
D
wdr=12u
6u
D
M120
"nch"
G
ldr:1u
S
wdr=6u
6u
D
M106
"nch"
G
ldr:1u
S
wdr=6u
vss!

Fig 9.02DG

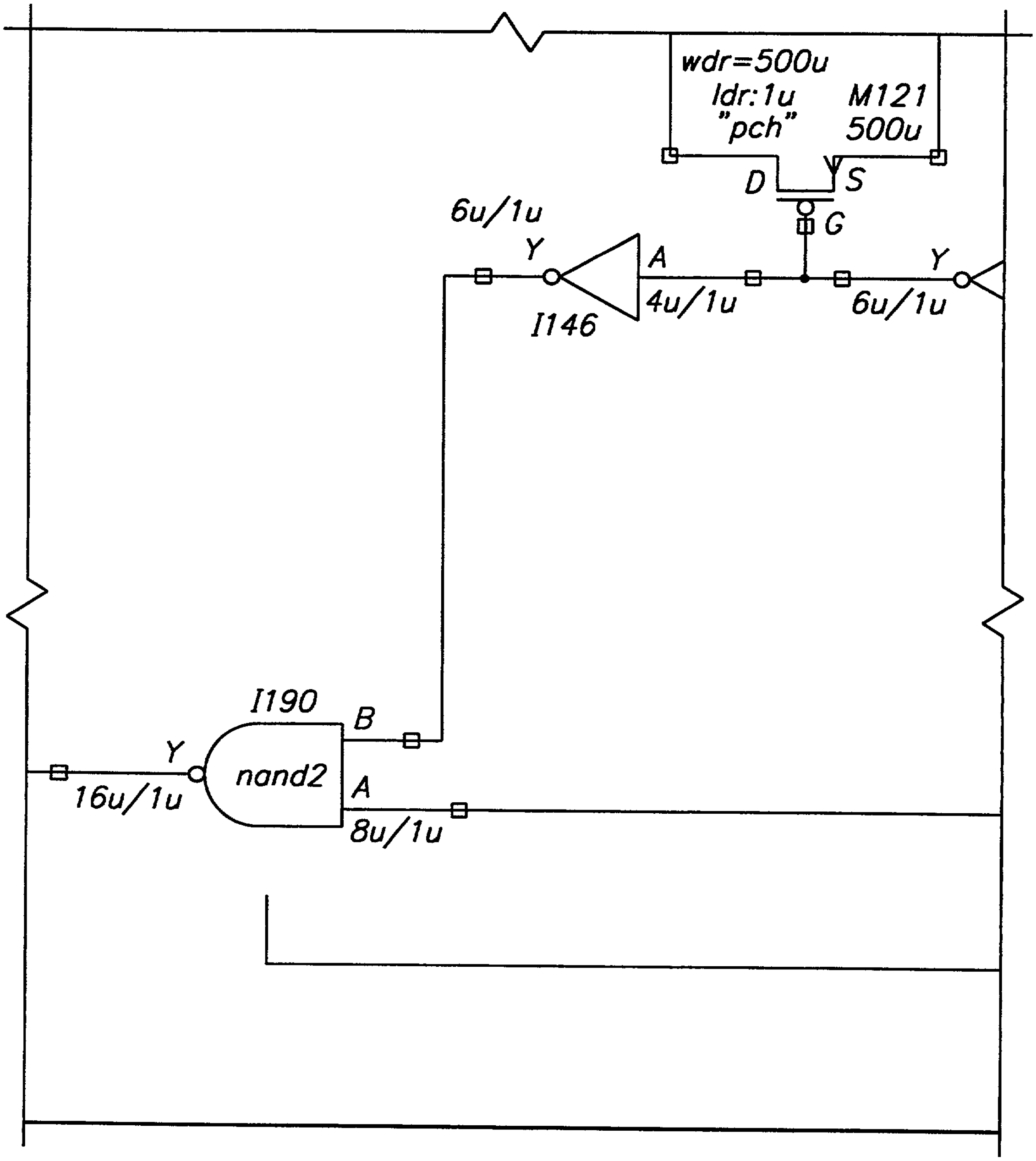
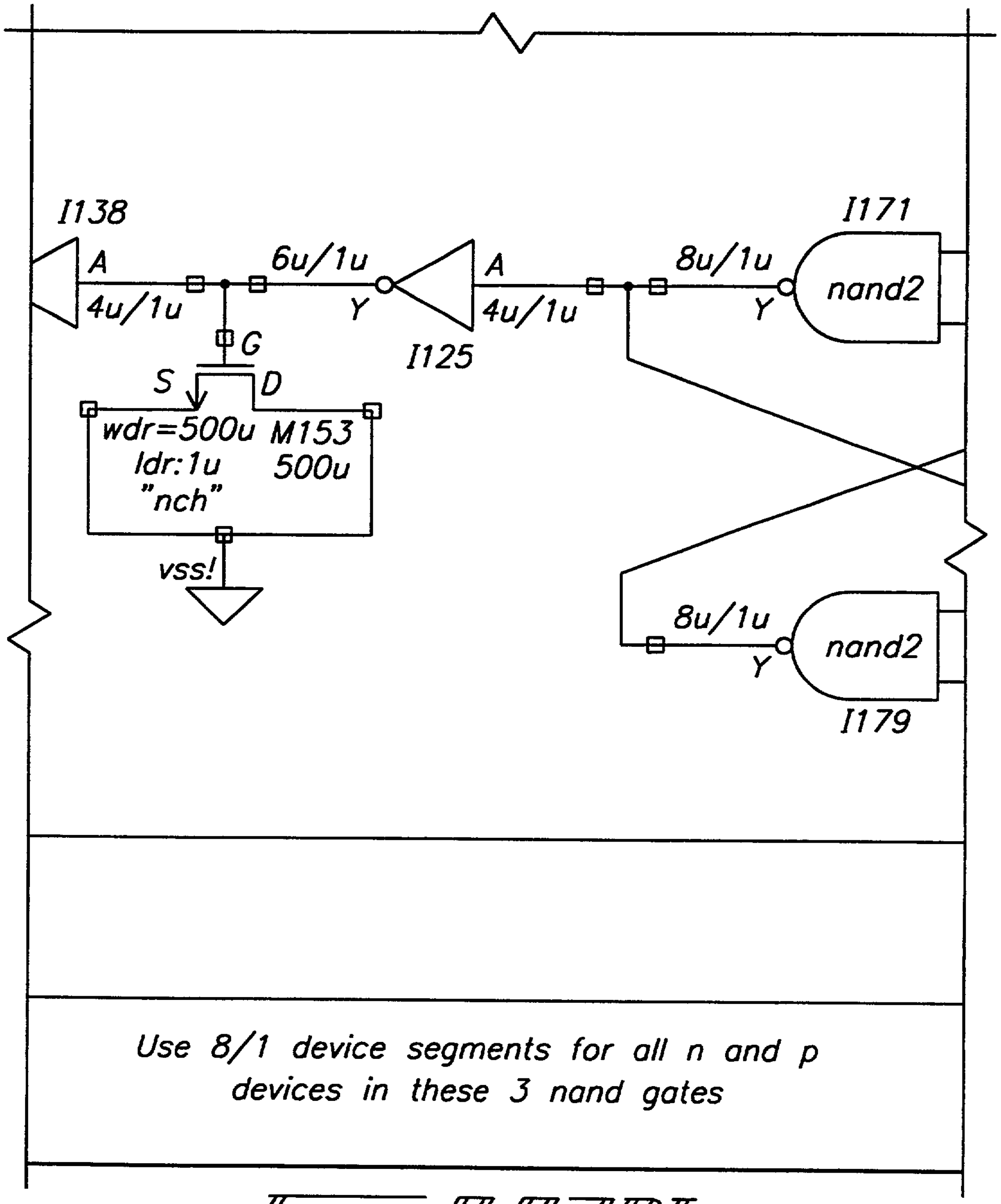

wdr=500u
ldr:1u
"pch"
M121
500u
D
S
G
6u/1u
Y
A
4u/1u
I146
Y
6u/1u
I190
B
Y
nand2
A
16u/1u
8u/1u

Fig 9.02DH



Use 8/1 device segments for all n and p devices in these 3 nand gates

Fig 9.02DI

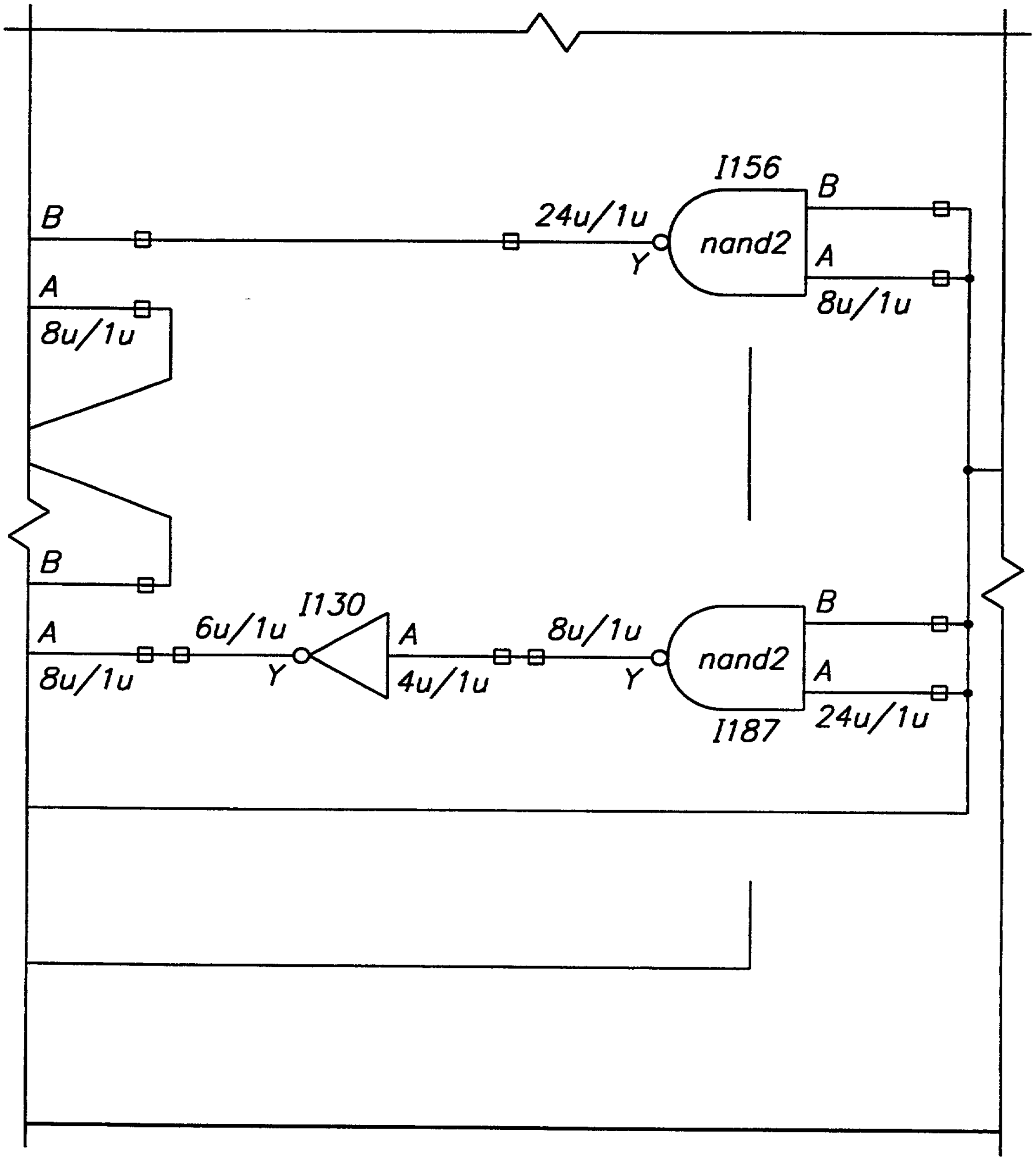

I156
B
24u/1u
nand2
Y
A
8u/1u
B
A
8u/1u
B
A
8u/1u
6u/1u
I130
Y
A
4u/1u
8u/1u
Y
nand2
B
A
24u/1u
I187

Fig 9.02Dd

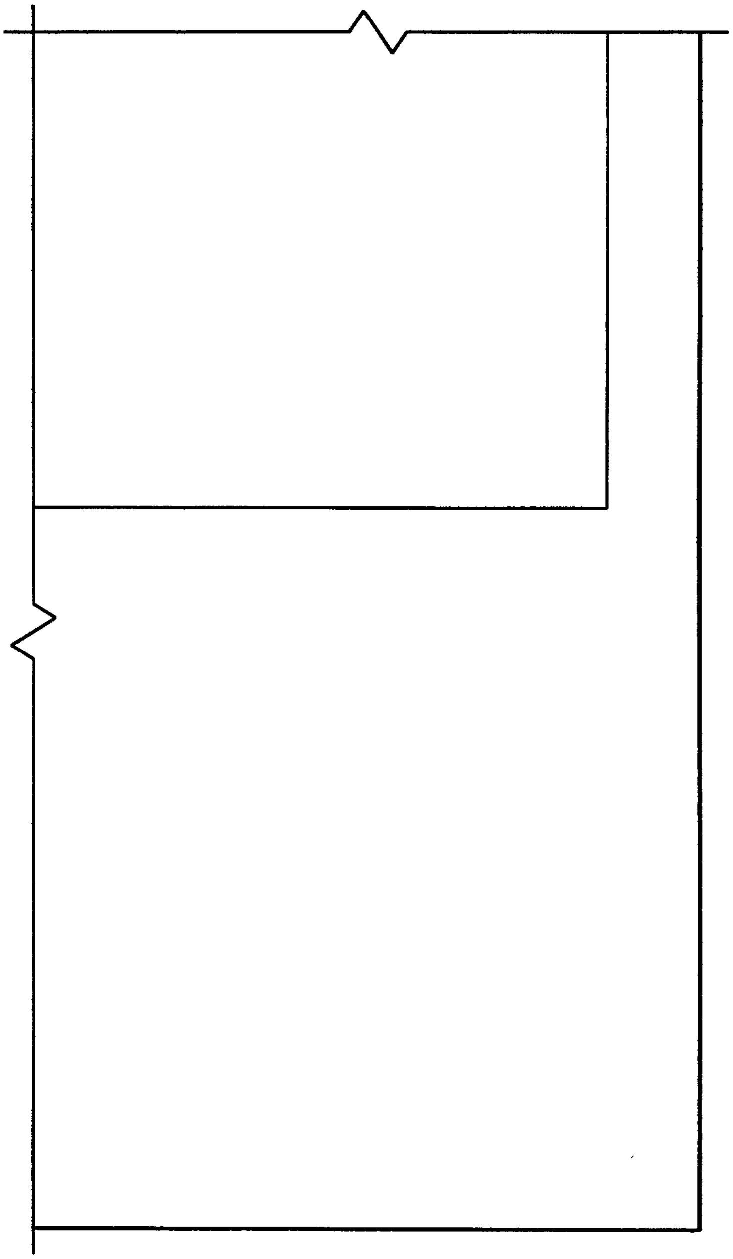


Fig 9.02DK

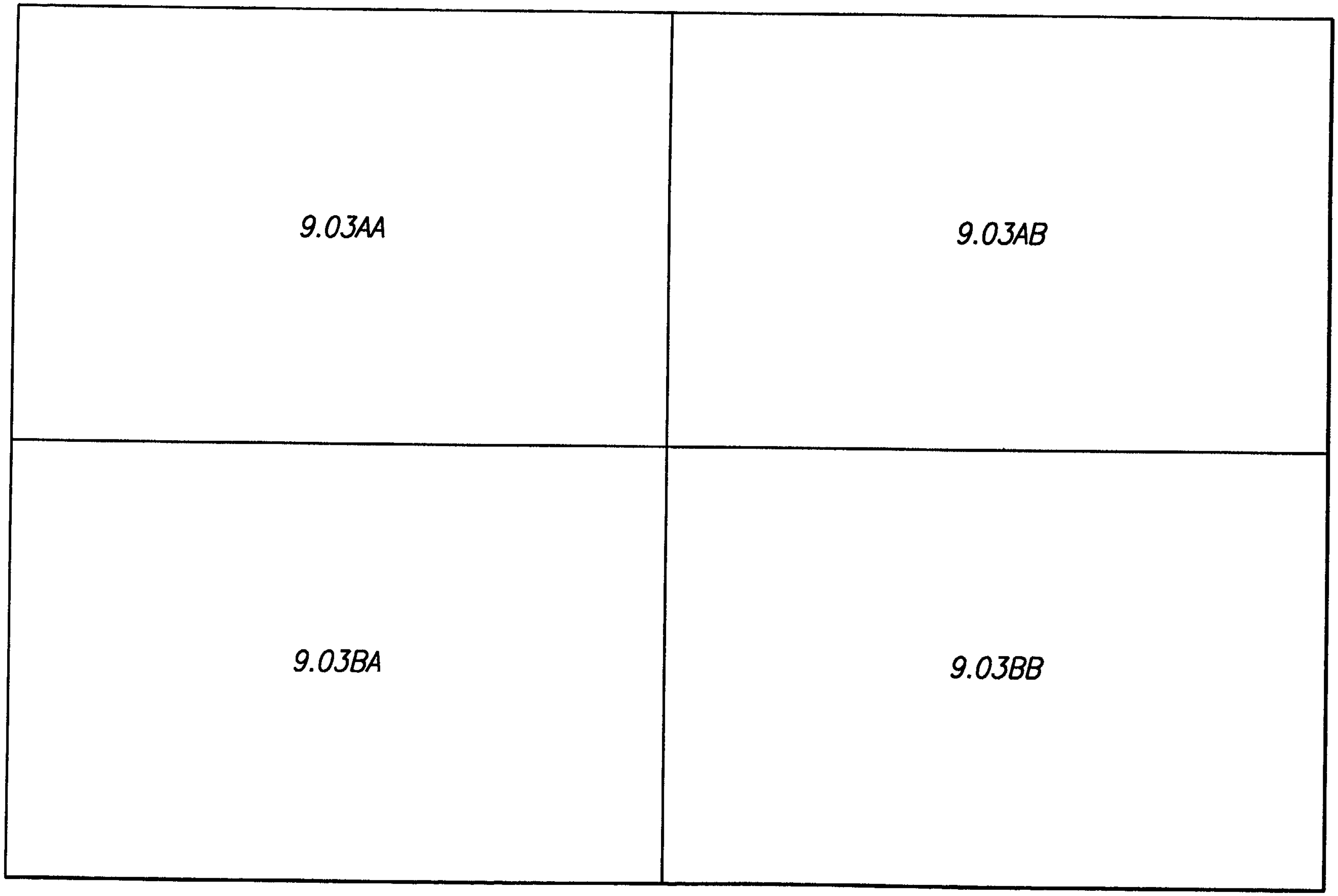


Fig 9.03

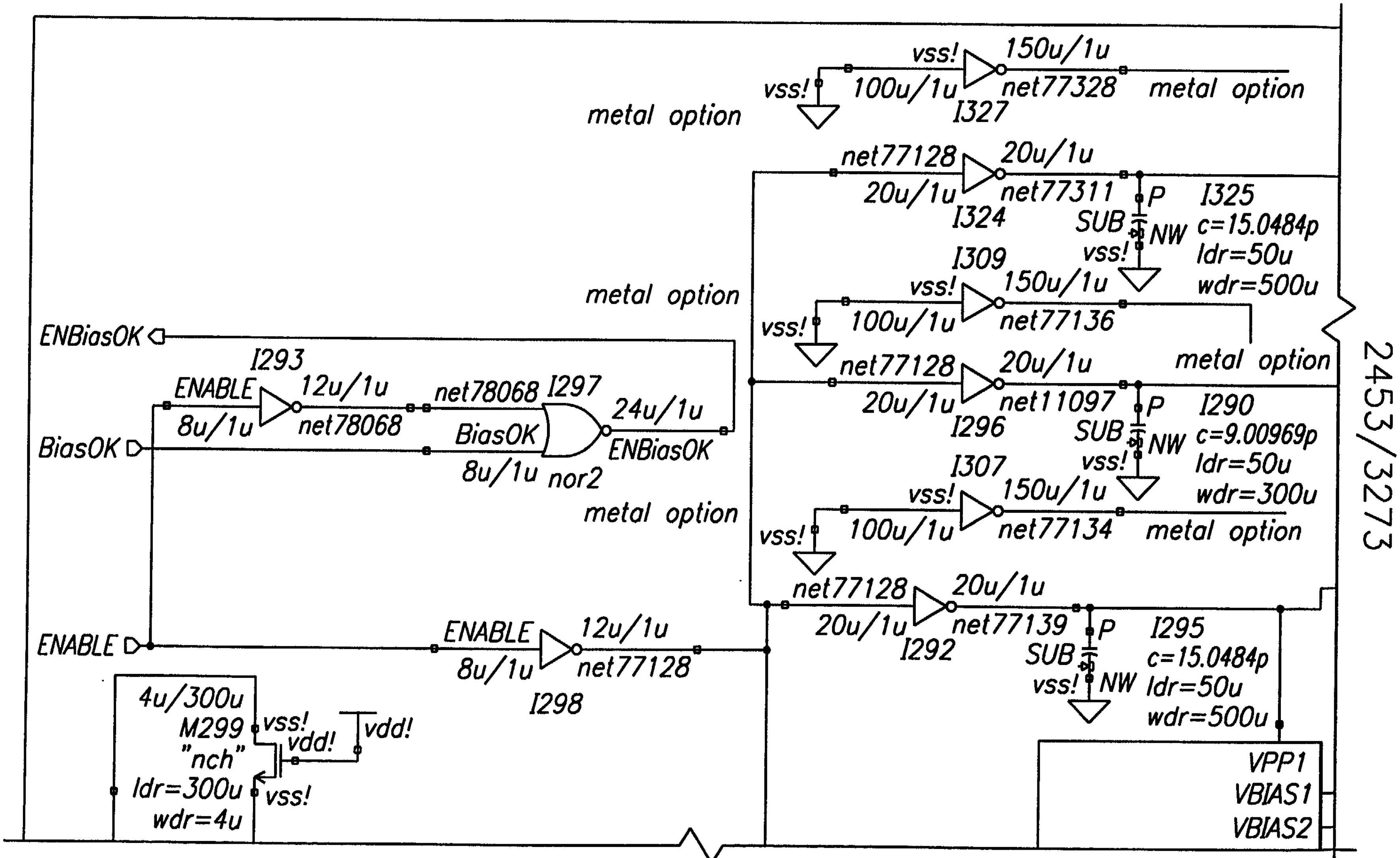
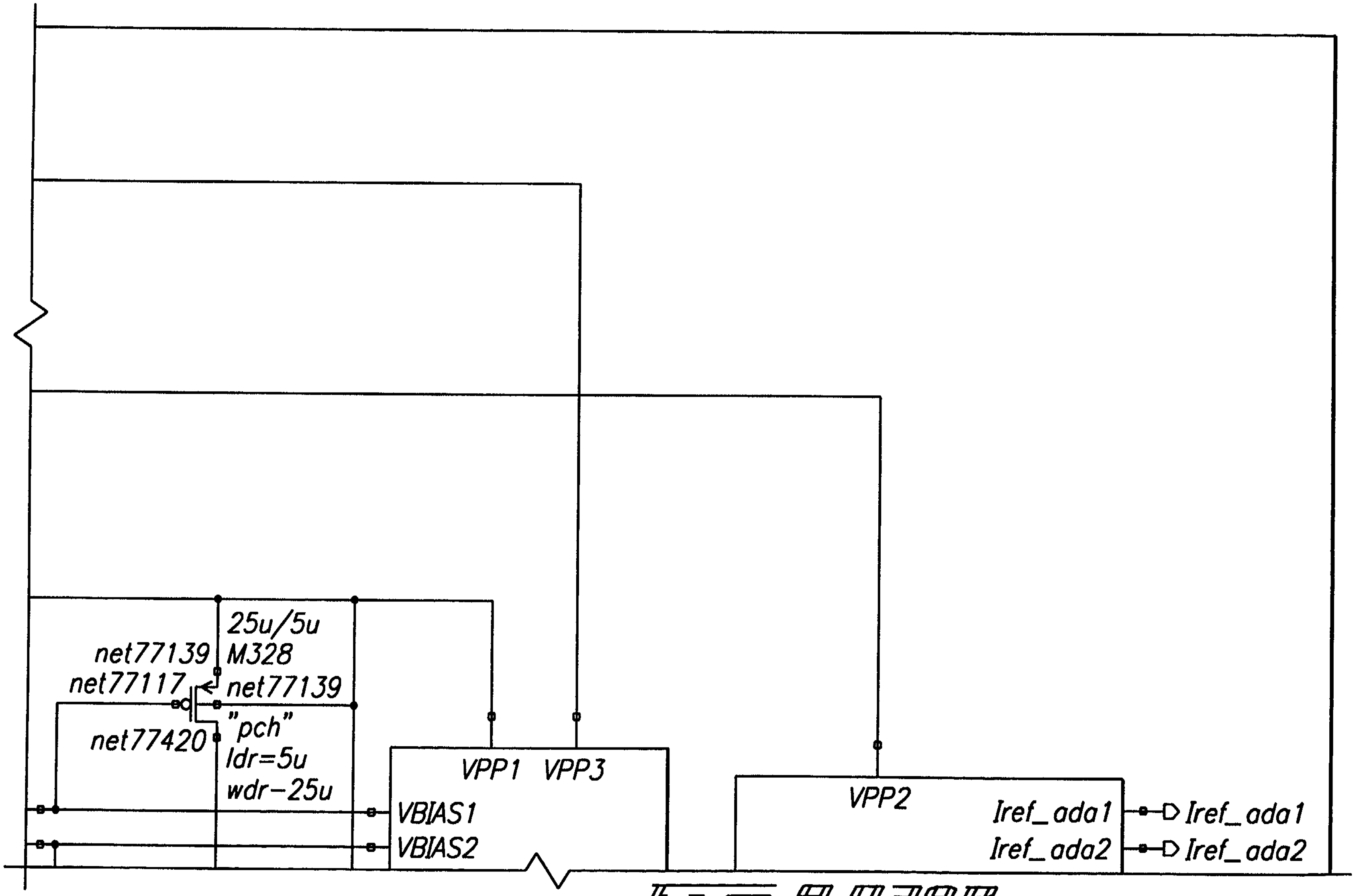

2453/3273
vss!
150u/1u
vss!
100u/1u
net77328
metal option
I327
metal option
net77128
20u/1u
20u/1u
net77311
I324
P
I325
SUB
NW
c=15.0484p
vss!
ldr=50u
wdr=500u
I309
metal option
vss!
150u/1u
vss!
100u/1u
net77136
metal option
ENBiasOK
net77128
20u/1u
20u/1u
net11097
I296
P
I290
SUB
NW
c=9.00969p
vss!
ldr=50u
wdr=300u
I307
vss!
150u/1u
vss!
100u/1u
net77134
metal option
metal option
I293
ENABLE
12u/1u
8u/1u
net78068
net78068
I297
24u/1u
BiasOK
BiasOK
8u/1u
nor2
ENBiasOK
net77128
20u/1u
20u/1u
net77139
I292
P
I295
SUB
c=15.0484p
vss!
NW
ldr=50u
wdr=500u
ENABLE
ENABLE
12u/1u
8u/1u
net77128
I298
4u/300u
M299
"nch"
ldr=300u
wdr=4u
vss!
vdd!
vdd!
vss!
VPP1
VBIAS1
VBIAS2

Fig 9.03AA



25u/5u
net77139
M328
net77117
net77139
"pch"
net77420
ldr=5u
wdr-25u
VPP1
VPP3
VBIAS1
VBIAS2
VPP2
Iref_ada1
Iref_ada2
Iref_ada1
Iref_ada2

Fig 9.03AB

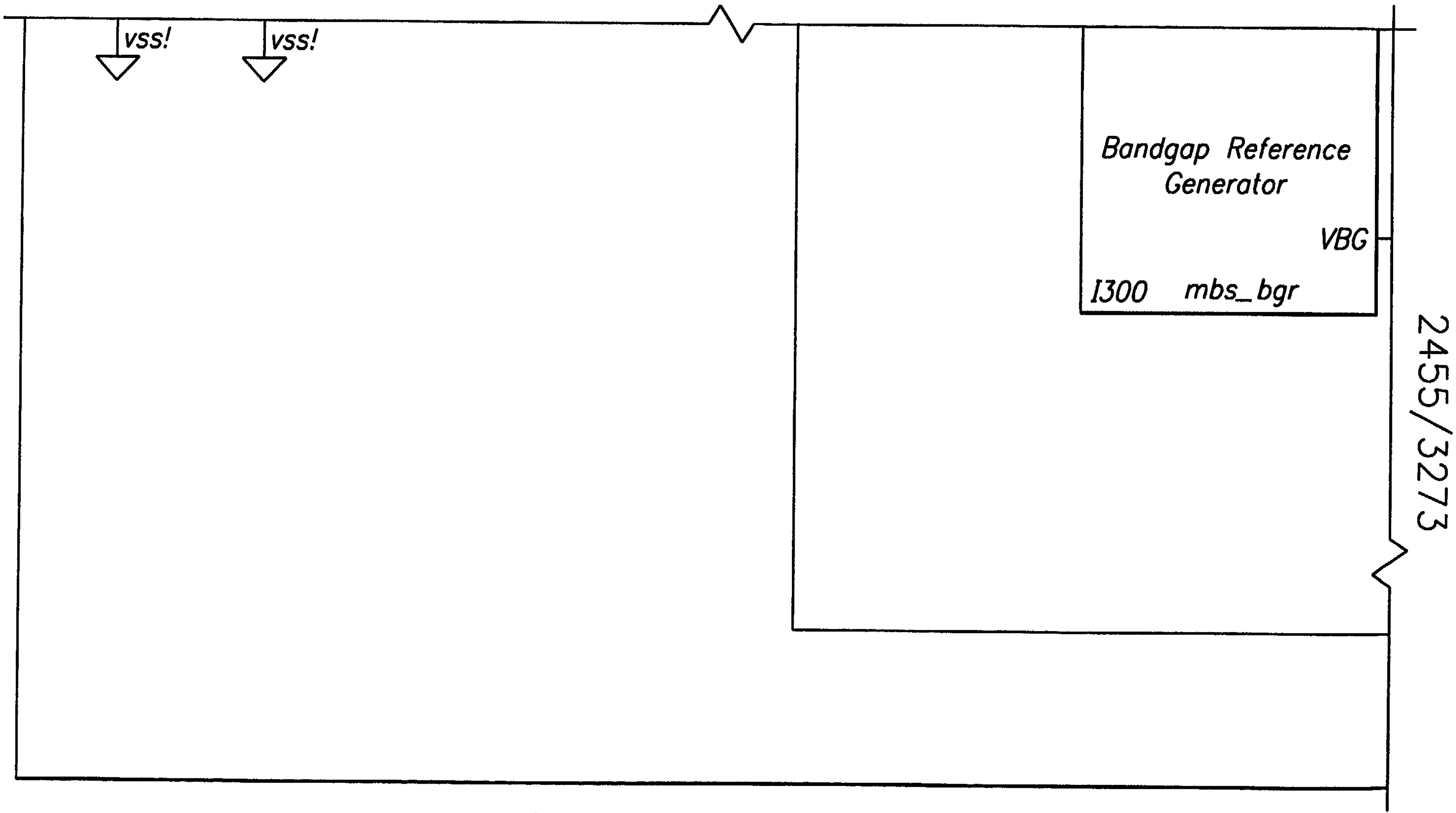

vss!
vss!
Bandgap Reference Generator
VBG
I300 mbs_bgr
2455/3273

Fig 9.03BA

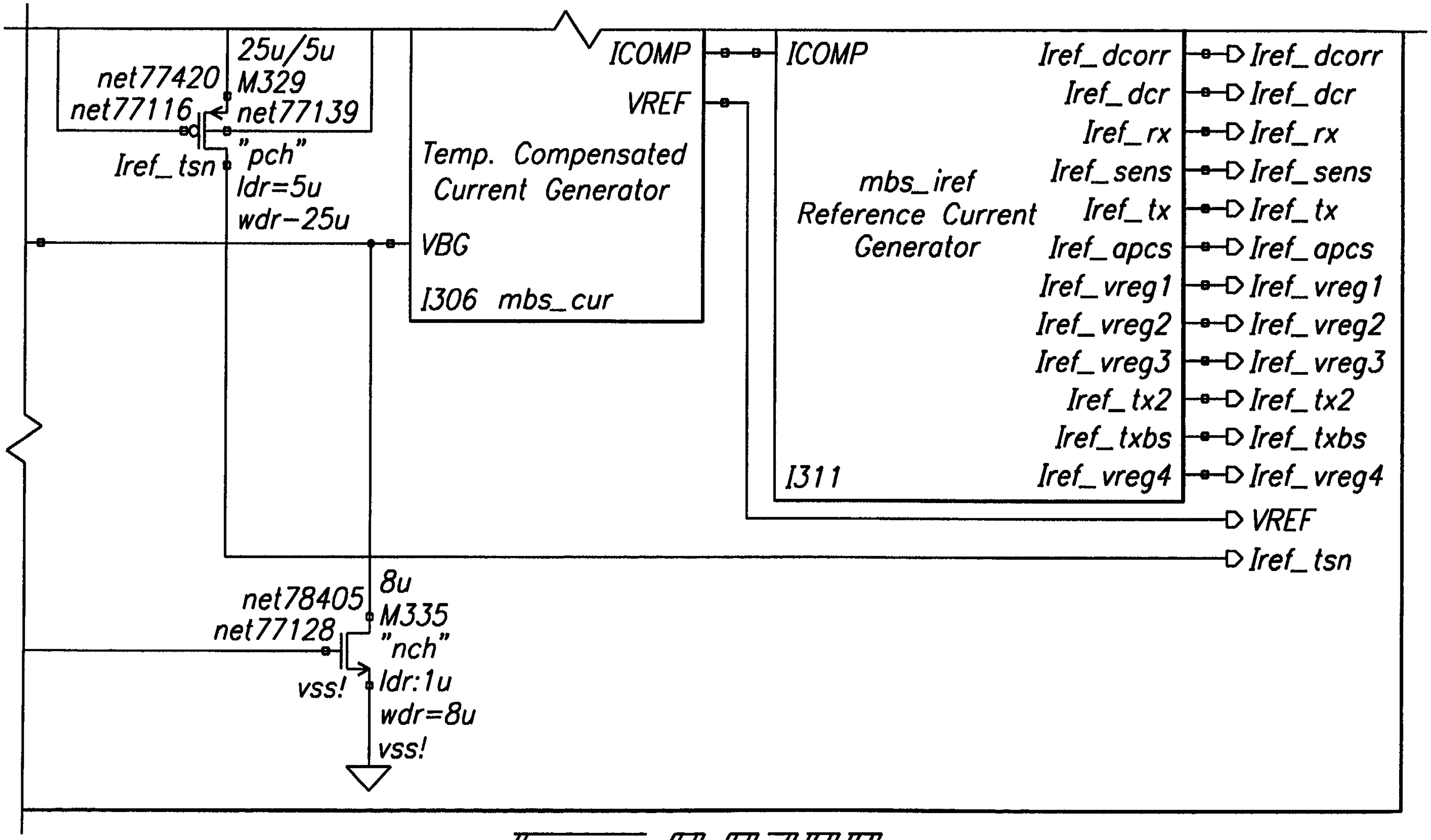

25u/5u
M329
net77420
net77116
net77139
"pch"
Iref_tsn
ldr=5u
wdr-25u
ICOMP
VREF
Temp. Compensated
Current Generator
VBG
I306 mbs_cur
ICOMP
mbs_iref
Reference Current
Generator
I311
Iref_dcorr
Iref_dcr
Iref_rx
Iref_sens
Iref_tx
Iref_apcs
Iref_vreg1
Iref_vreg2
Iref_vreg3
Iref_tx2
Iref_txbs
Iref_vreg4
Iref_dcorr
Iref_dcr
Iref_rx
Iref_sens
Iref_tx
Iref_apcs
Iref_vreg1
Iref_vreg2
Iref_vreg3
Iref_tx2
Iref_txbs
Iref_vreg4
VREF
Iref_tsn
8u
M335
net78405
net77128
"nch"
vss!
ldr:1u
wdr=8u
vss!

Fig 9.03BB

9.0301AA	9.0301AB	9.0301AC	9.0301AD	9.0301AE	9.0301AF	9.0301AG	9.0301AH	9.0301AI	9.0301AJ
9.0301BA	9.0301BB	9.0301BC	9.0301BD	9.0301BE	9.0301BF	9.0301BG	9.0301BH	9.0301BI	9.0301BJ
	9.0301CB	9.0301CC	9.0301CD	9.0301CE	9.0301CF	9.0301CG	9.0301CH	9.0301CI	9.0301CJ
9.0301DA	9.0301DB	9.0301DC	9.0301DD	9.0301DE	9.0301DF	9.0301DG	9.0301DH	9.0301DI	9.0301DJ

Fig. 9.0301

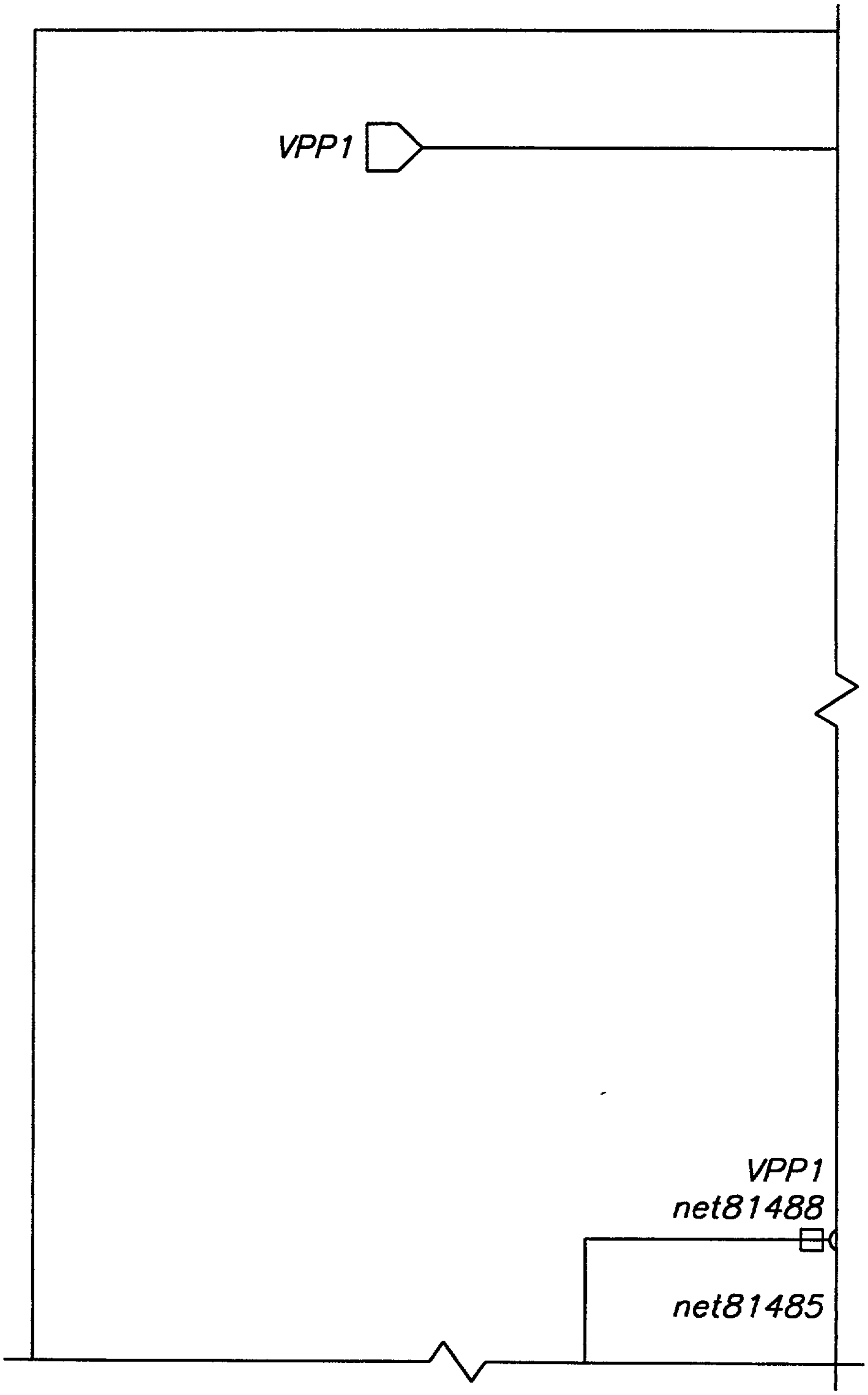


Fig 9.0301AA

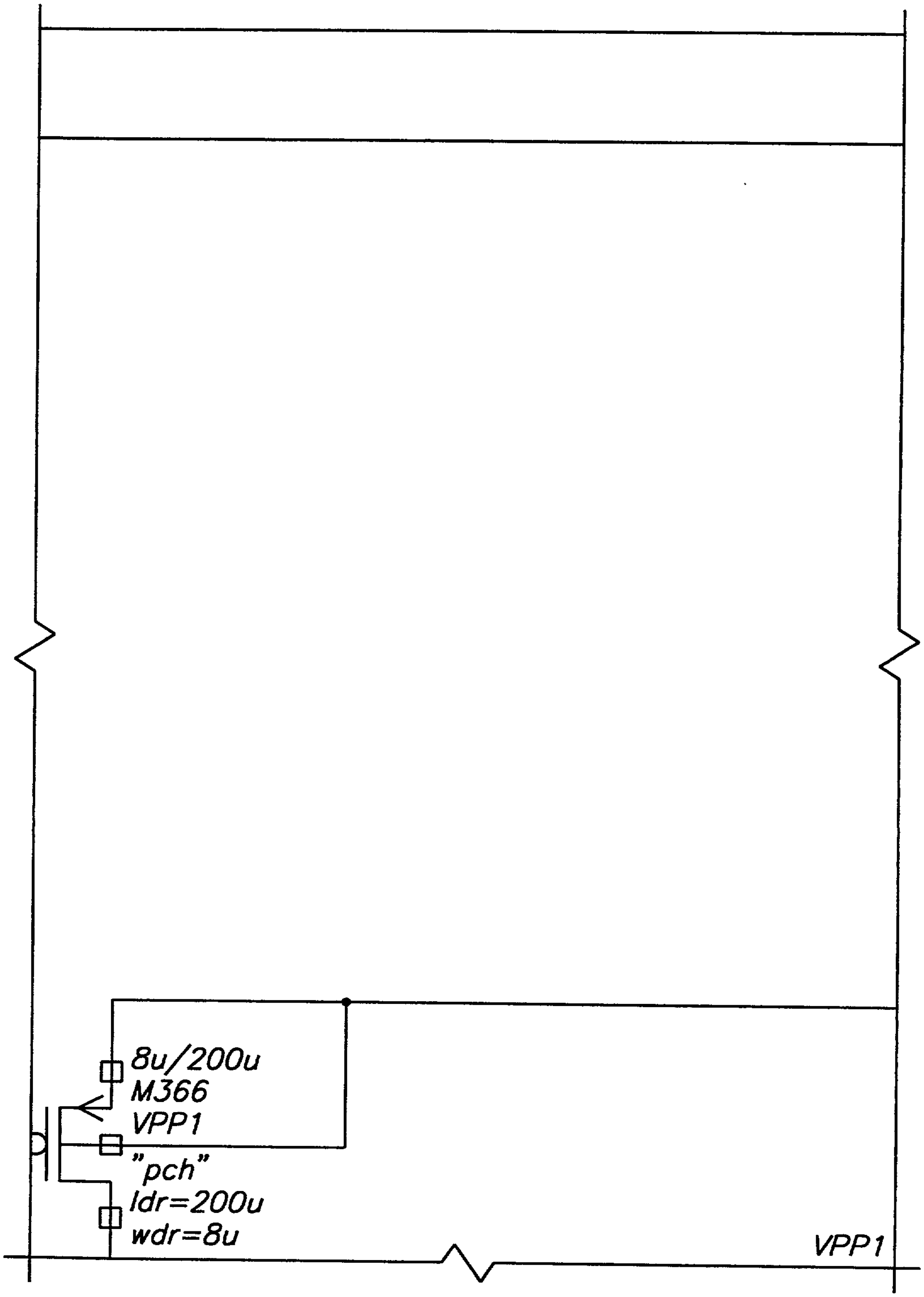


Fig 9.0301AB

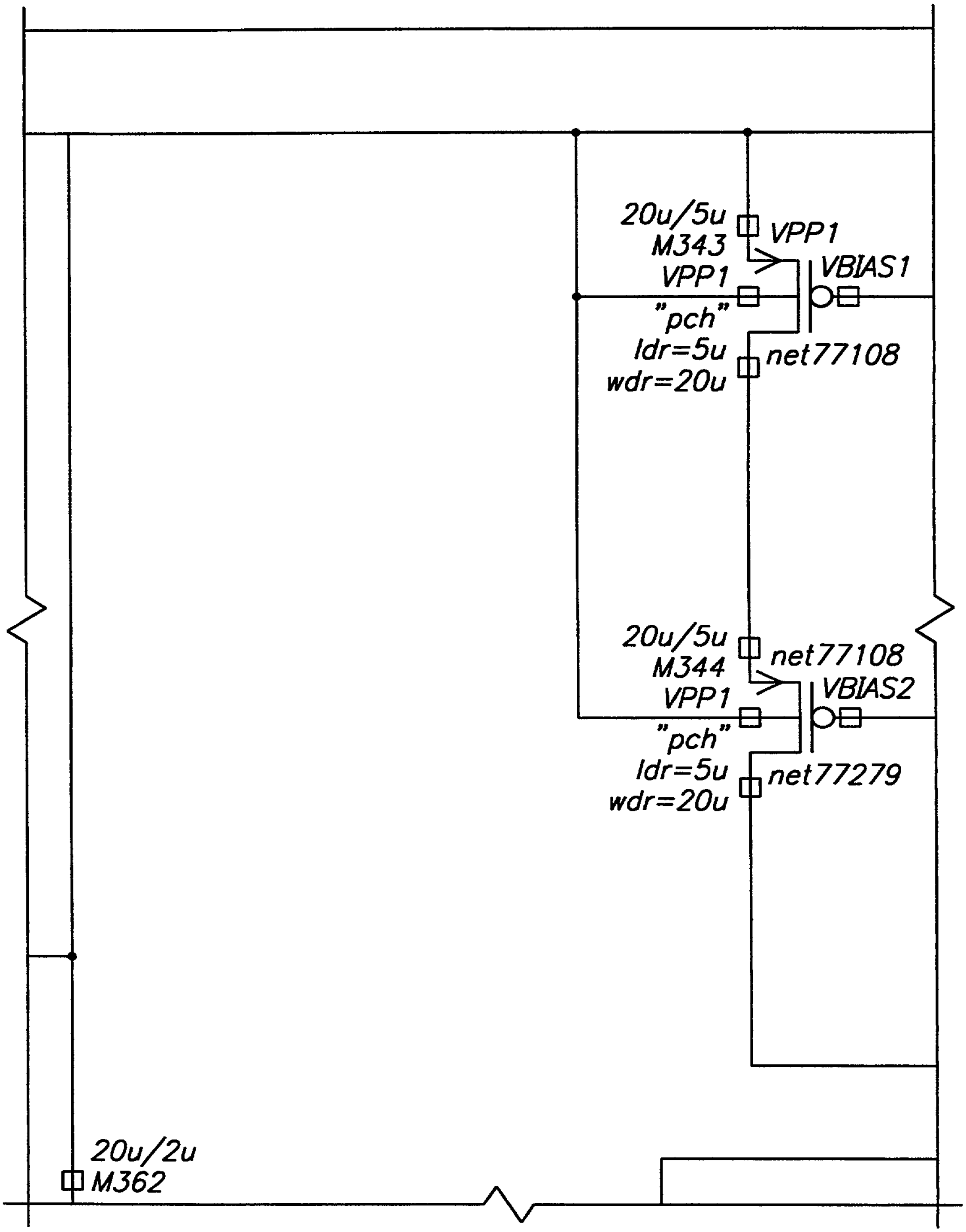

20u/5u
M343
VPP1
"pch"
ldr=5u
wdr=20u
VPP1
VBIAS1
net77108
20u/5u
M344
VPP1
"pch"
ldr=5u
wdr=20u
net77108
VBIAS2
net77279
20u/2u
M362

Fig 9.0301AC

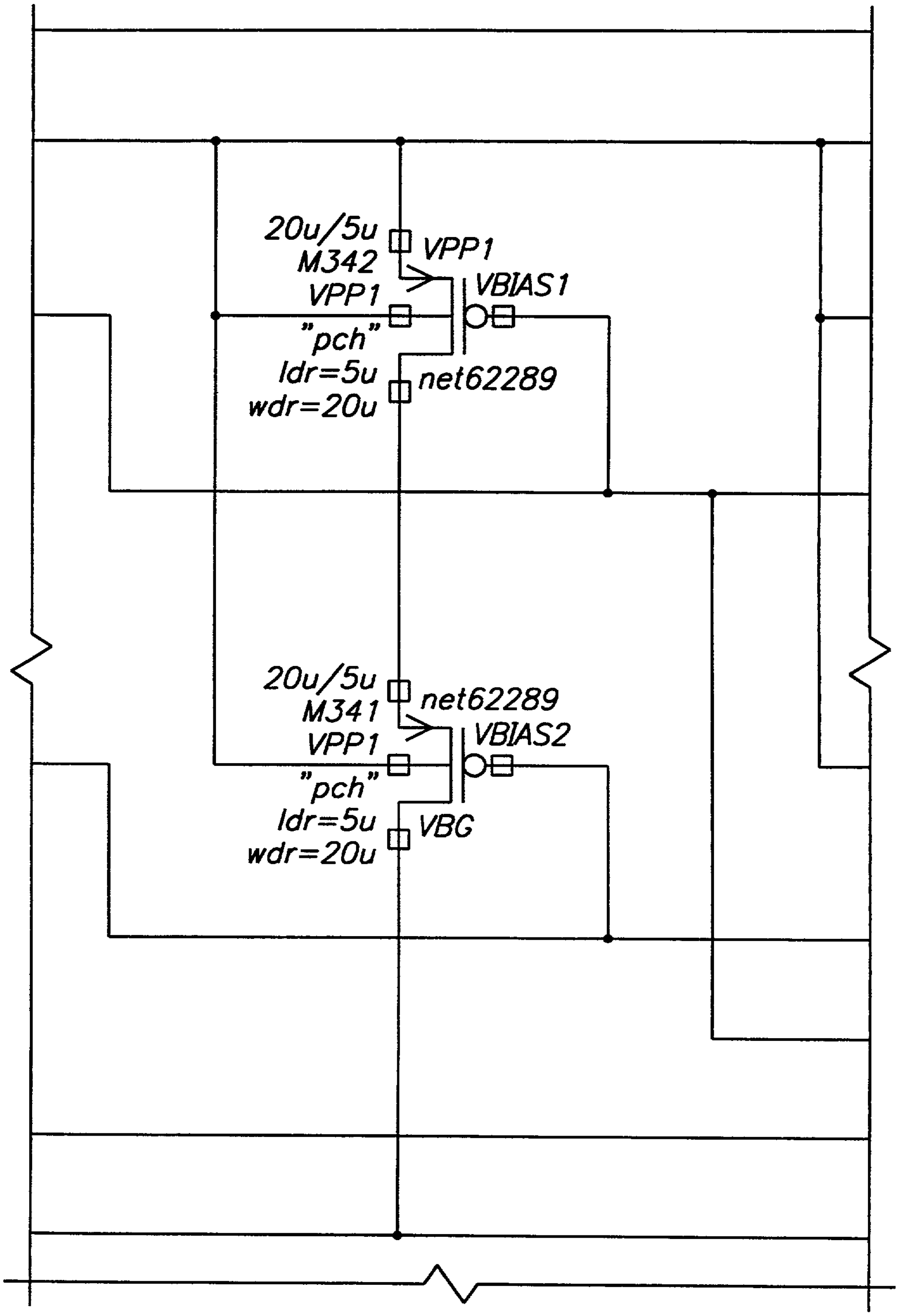

20u/5u
M342
VPP1
"pch"
ldr=5u
wdr=20u
VPP1
VBIAS1
net62289
20u/5u
M341
VPP1
"pch"
ldr=5u
wdr=20u
net62289
VBIAS2
VBG

Fig 9.0301AD

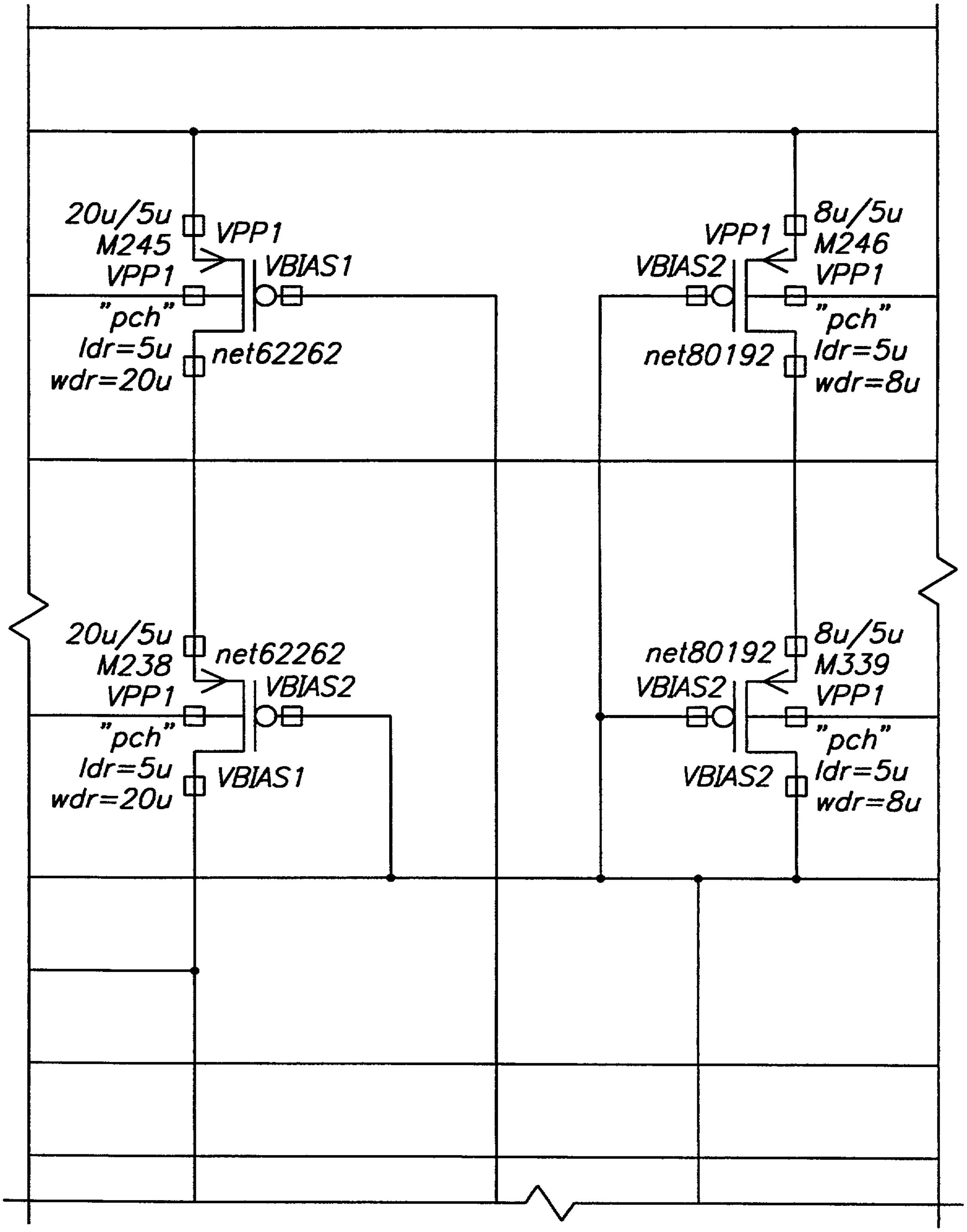

20u/5u
M245
VPP1
"pch"
ldr=5u
wdr=20u
VPP1
VBIAS1
net62262
8u/5u
M246
VPP1
"pch"
ldr=5u
wdr=8u
VPP1
VBIAS2
net80192
20u/5u
M238
VPP1
"pch"
ldr=5u
wdr=20u
net62262
VBIAS2
VBIAS1
8u/5u
M339
VPP1
"pch"
ldr=5u
wdr=8u
net80192
VBIAS2
VBIAS2

Fig 9.0301AE

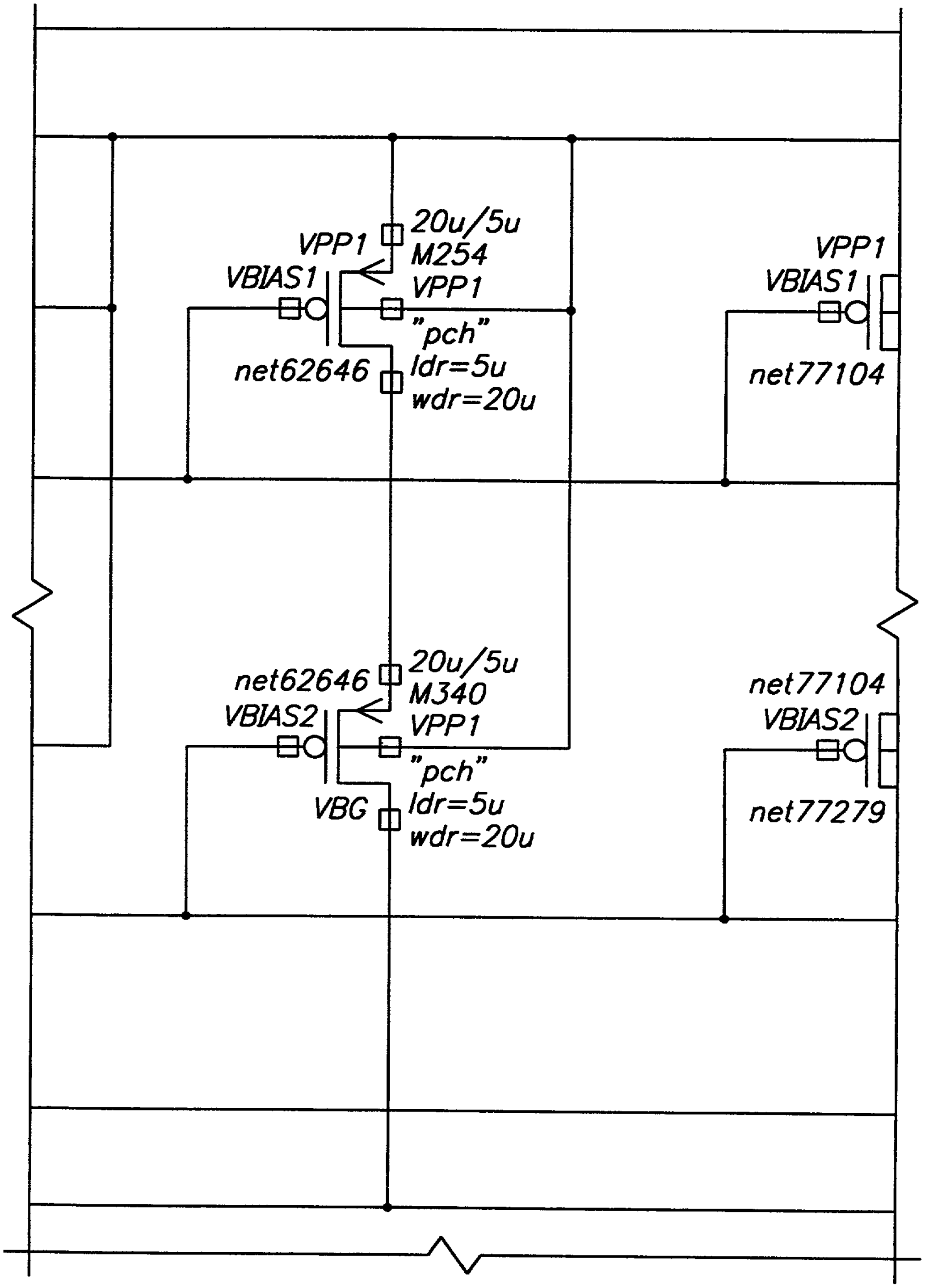

20u/5u
M254
VPP1
VBIAS1
VPP1
"pch"
net62646
ldr=5u
wdr=20u
VPP1
VBIAS1
net77104
20u/5u
net62646
M340
VBIAS2
VPP1
"pch"
VBG
ldr=5u
wdr=20u
net77104
VBIAS2
net77279

Fig 9.0301AF

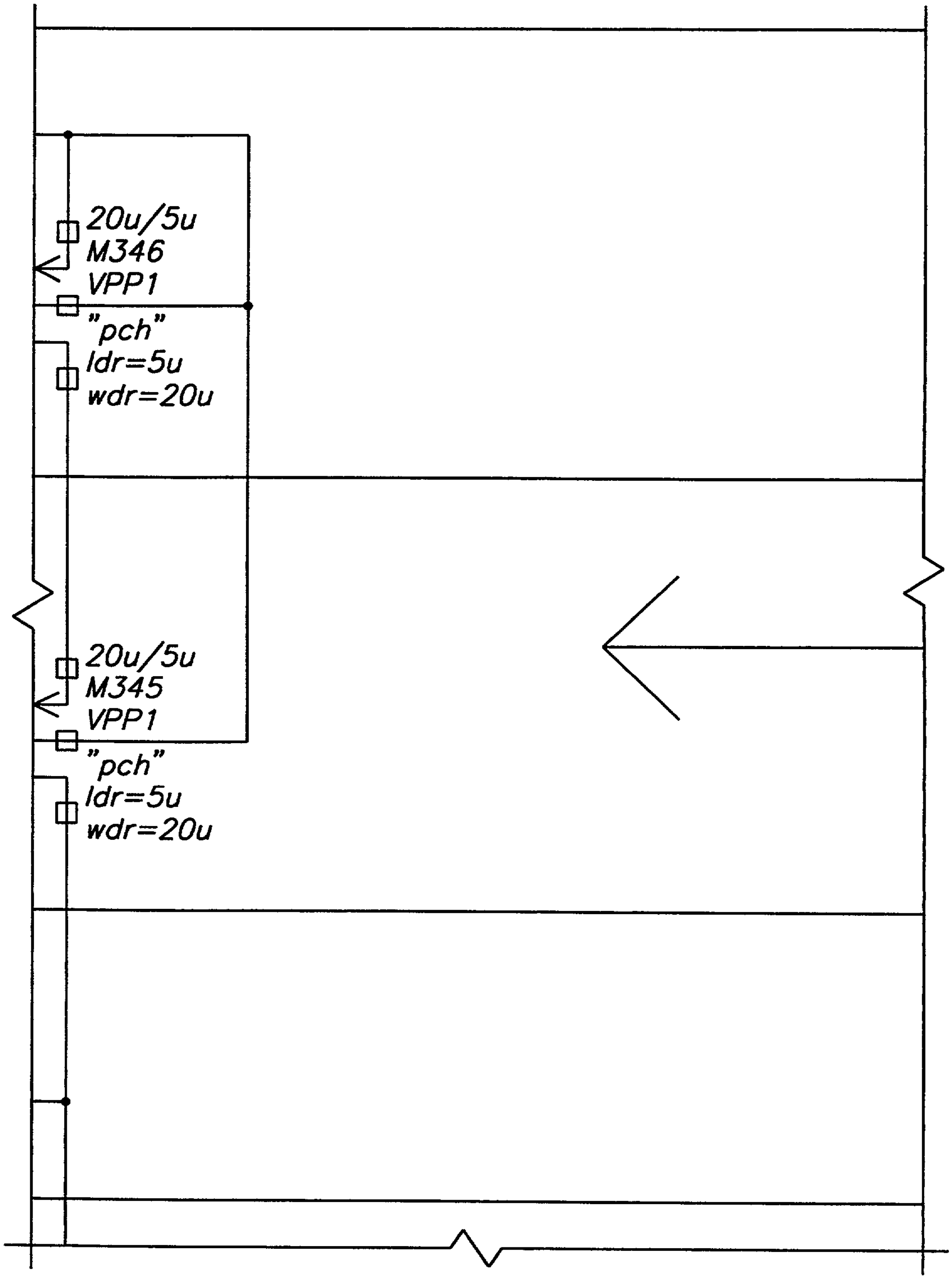

20u/5u
M346
VPP1
"pch"
ldr=5u
wdr=20u
20u/5u
M345
VPP1
"pch"
ldr=5u
wdr=20u

FIG 9.0301AG

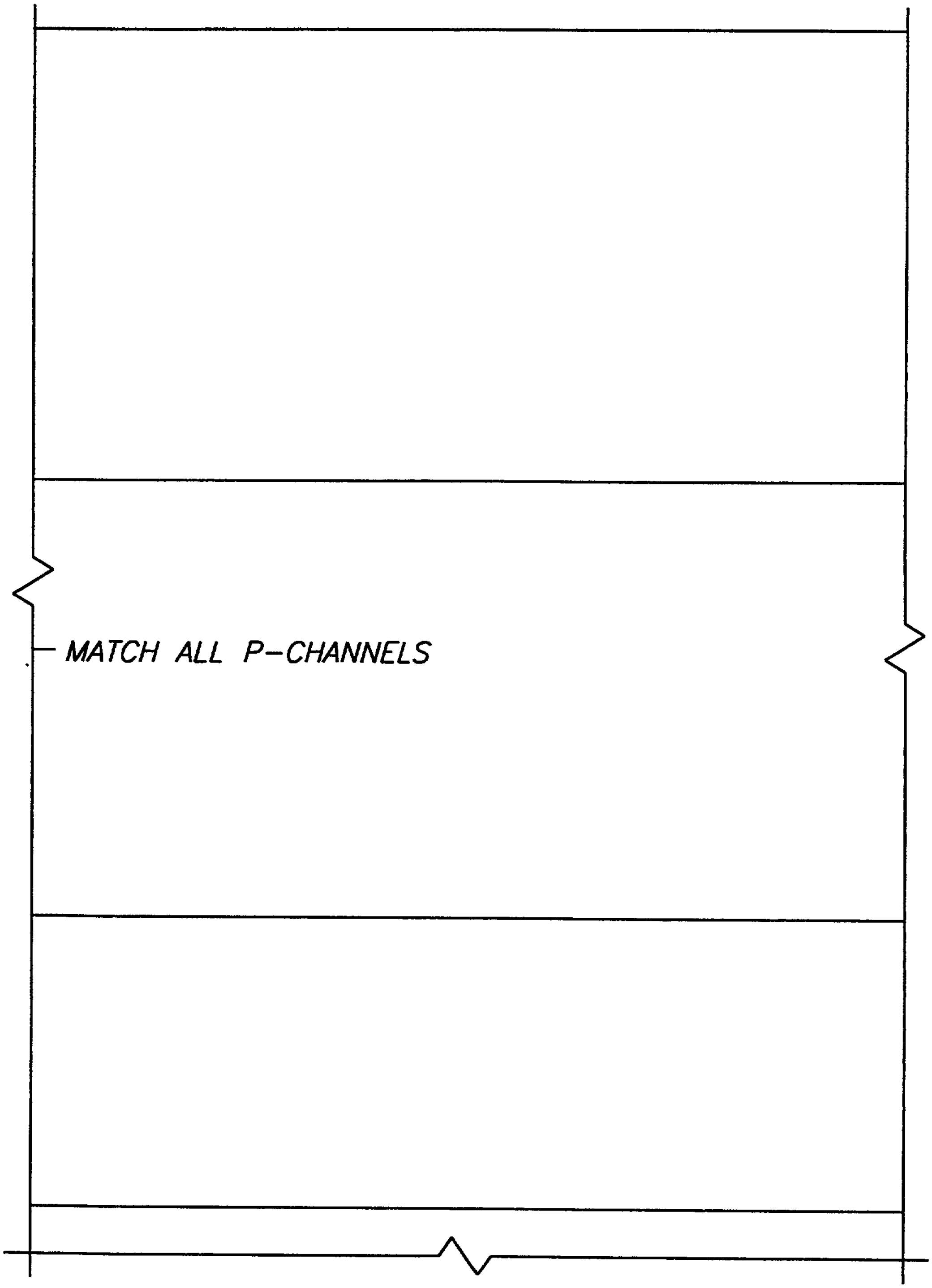


Fig 9.0301AH

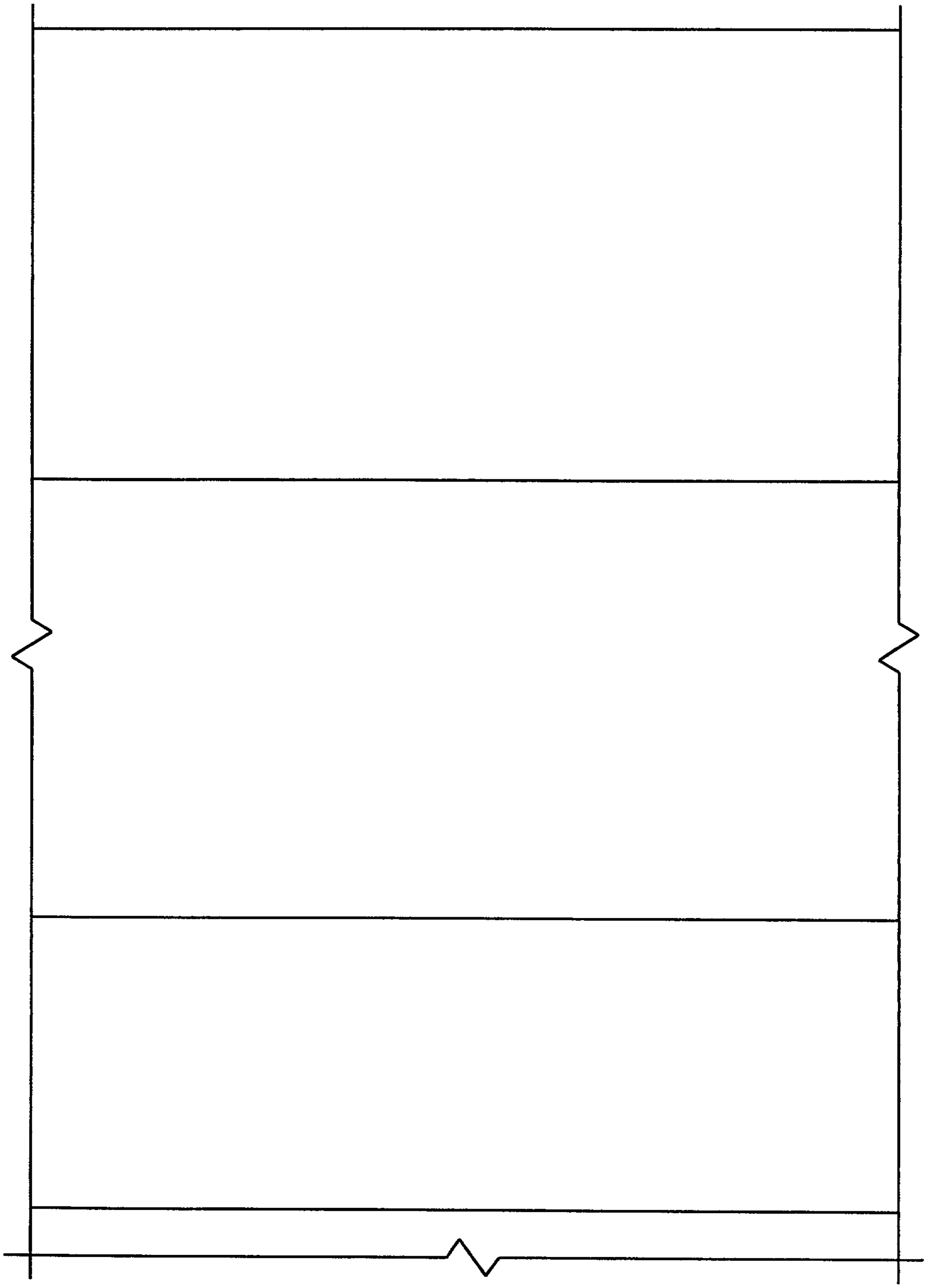


Fig 9.0301AI

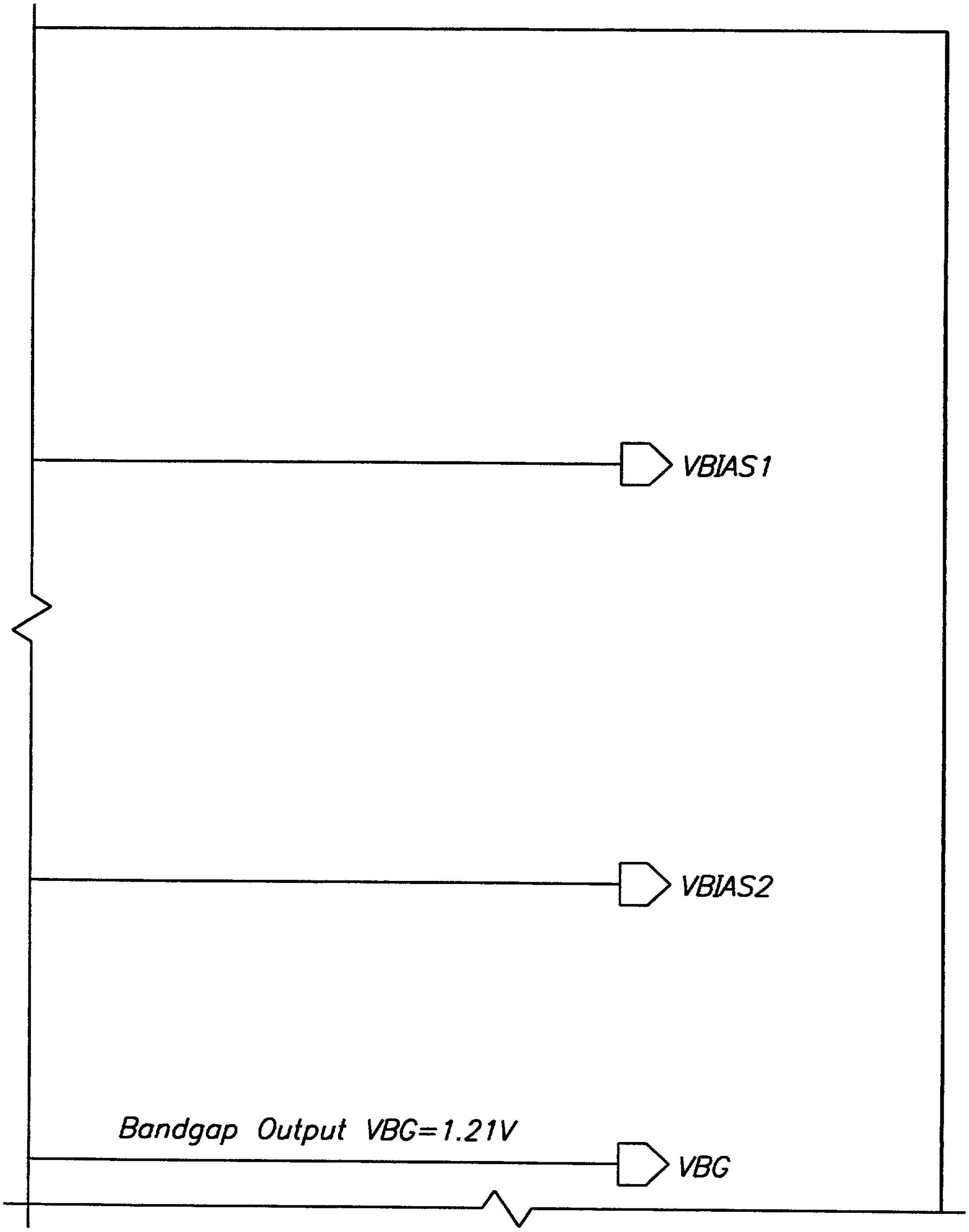


Fig 9.0301Ad

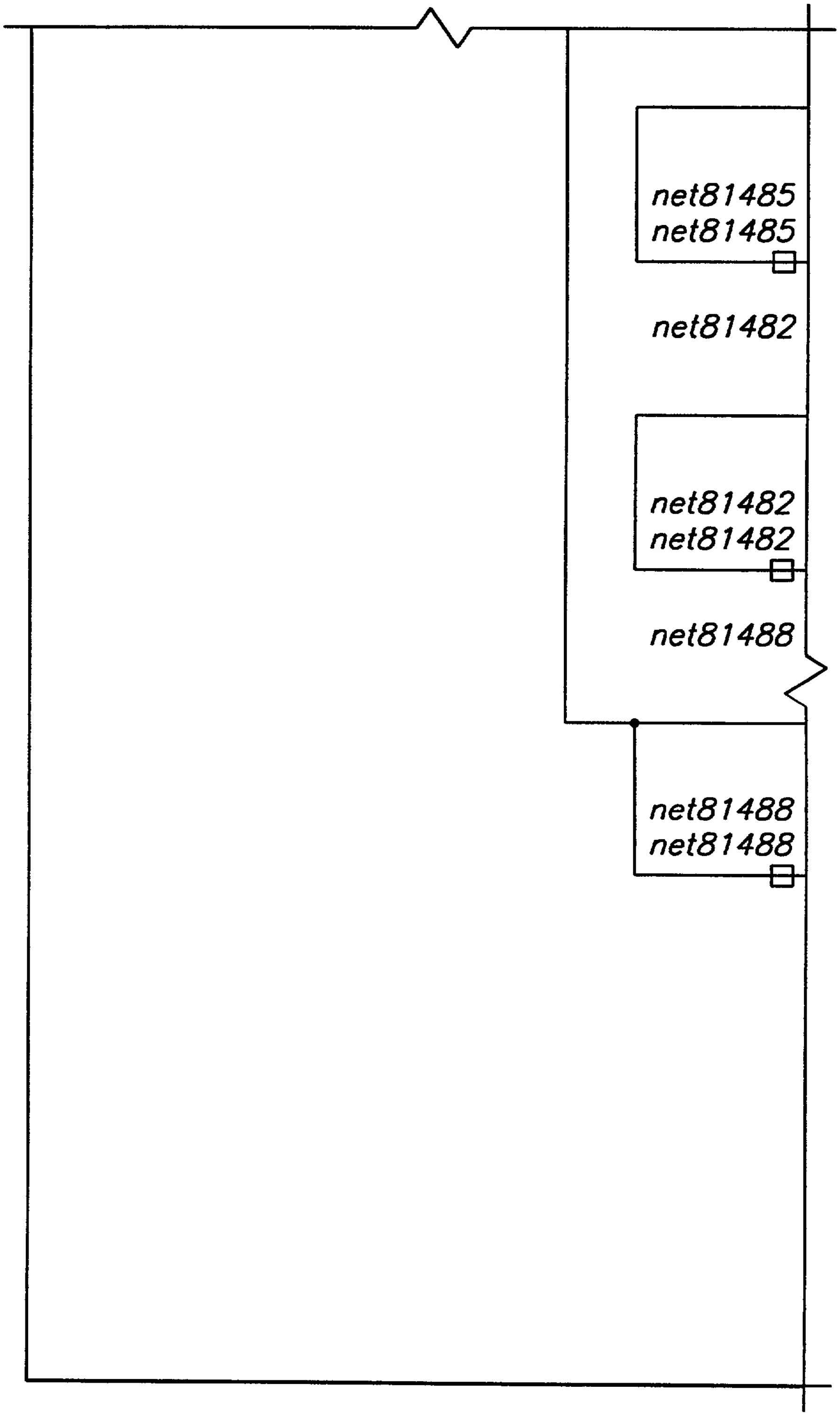

net81485
net81485
net81482
net81482
net81482
net81488
net81488
net81488

Fig 9.0301BA

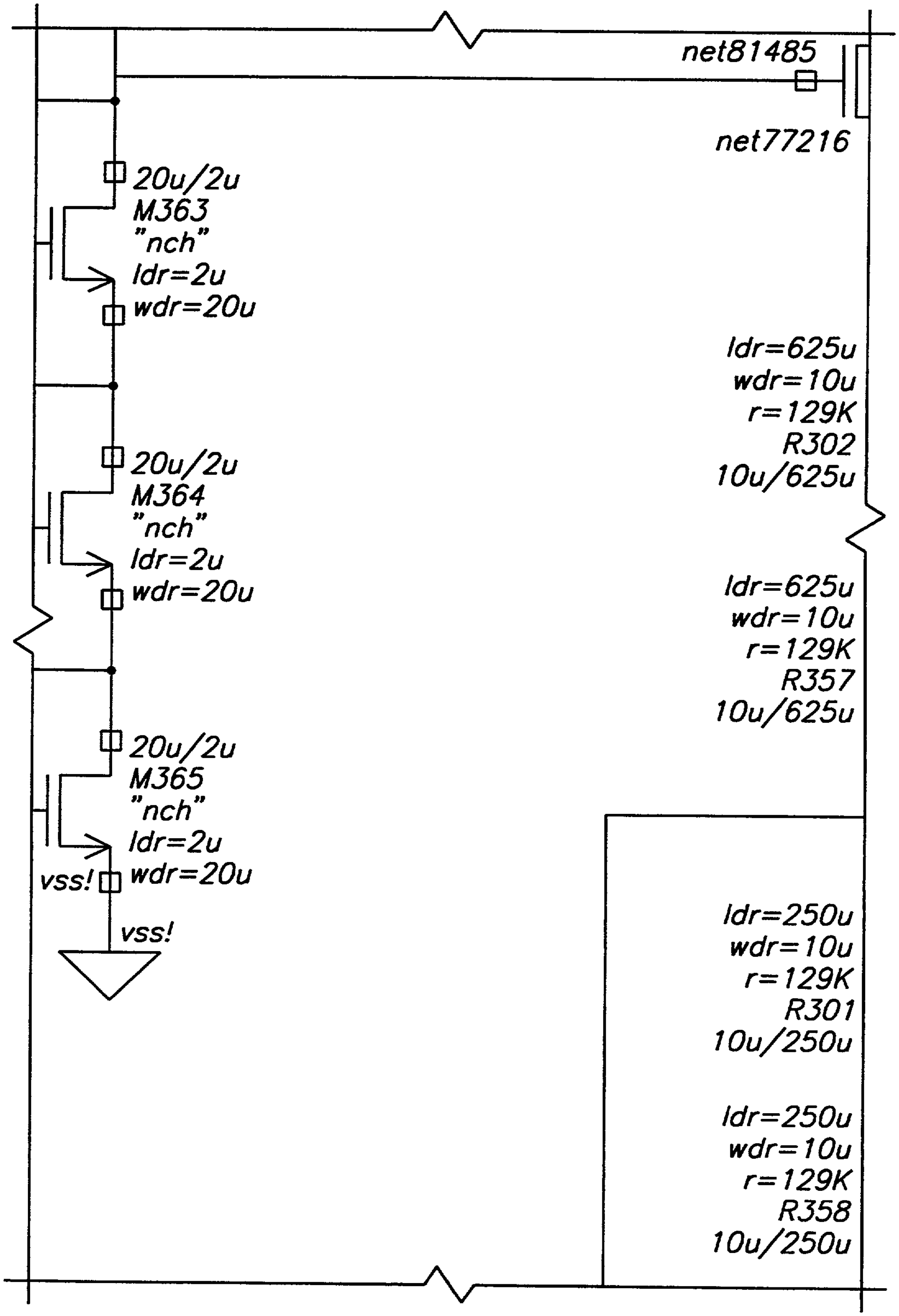

net81485
net77216
20u/2u
M363
"nch"
ldr=2u
wdr=20u
20u/2u
M364
"nch"
ldr=2u
wdr=20u
20u/2u
M365
"nch"
ldr=2u
vss!
wdr=20u
vss!
ldr=625u
wdr=10u
r=129K
R302
10u/625u
ldr=625u
wdr=10u
r=129K
R357
10u/625u
ldr=250u
wdr=10u
r=129K
R301
10u/250u
ldr=250u
wdr=10u
r=129K
R358
10u/250u

Fig 9.0301BB

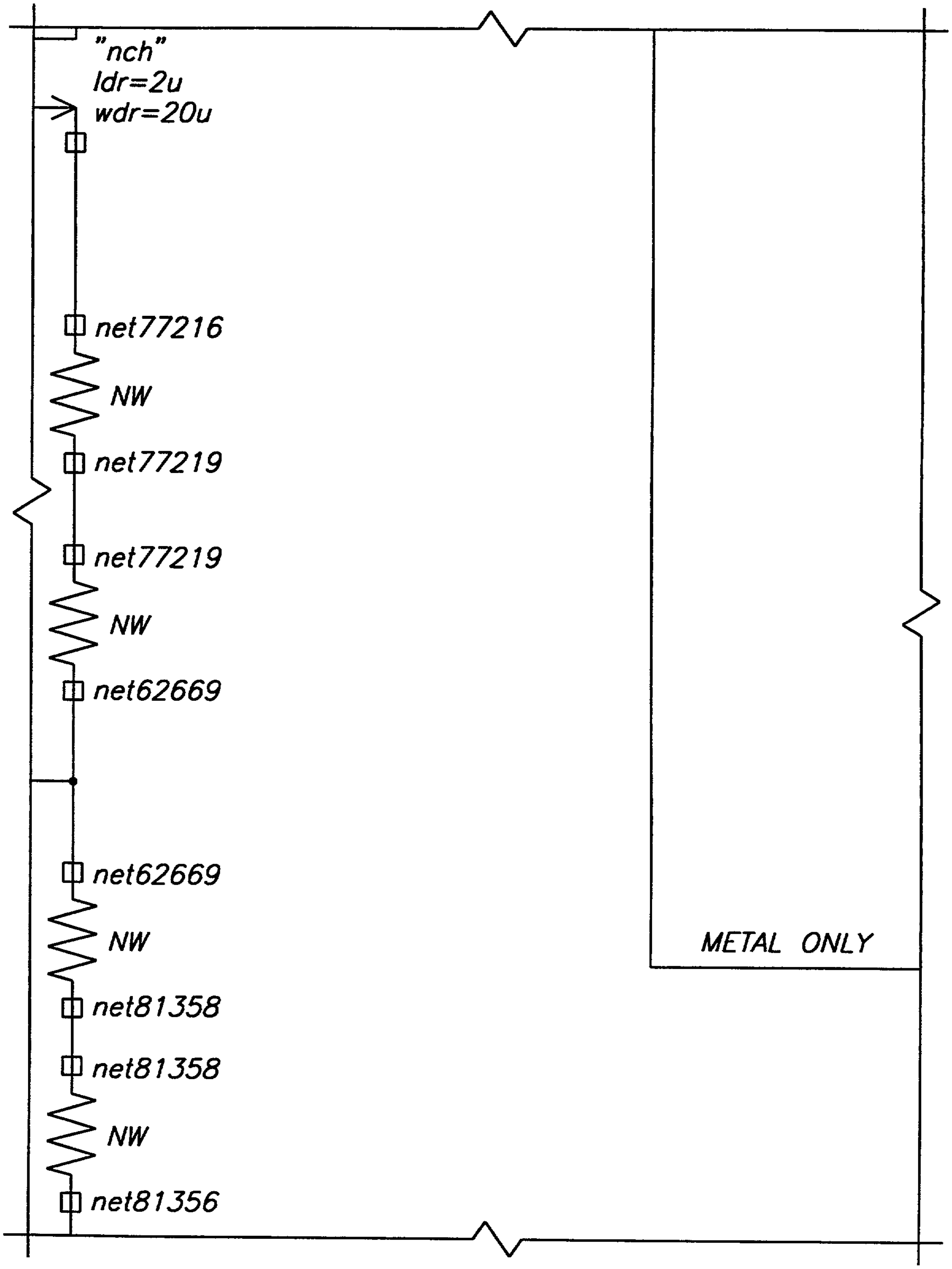

"nch"
ldr=2u
wdr=20u
net77216
NW
net77219
net77219
NW
net62669
net62669
NW
net81358
net81358
NW
net81356
METAL ONLY

FIG 9.03.01BC

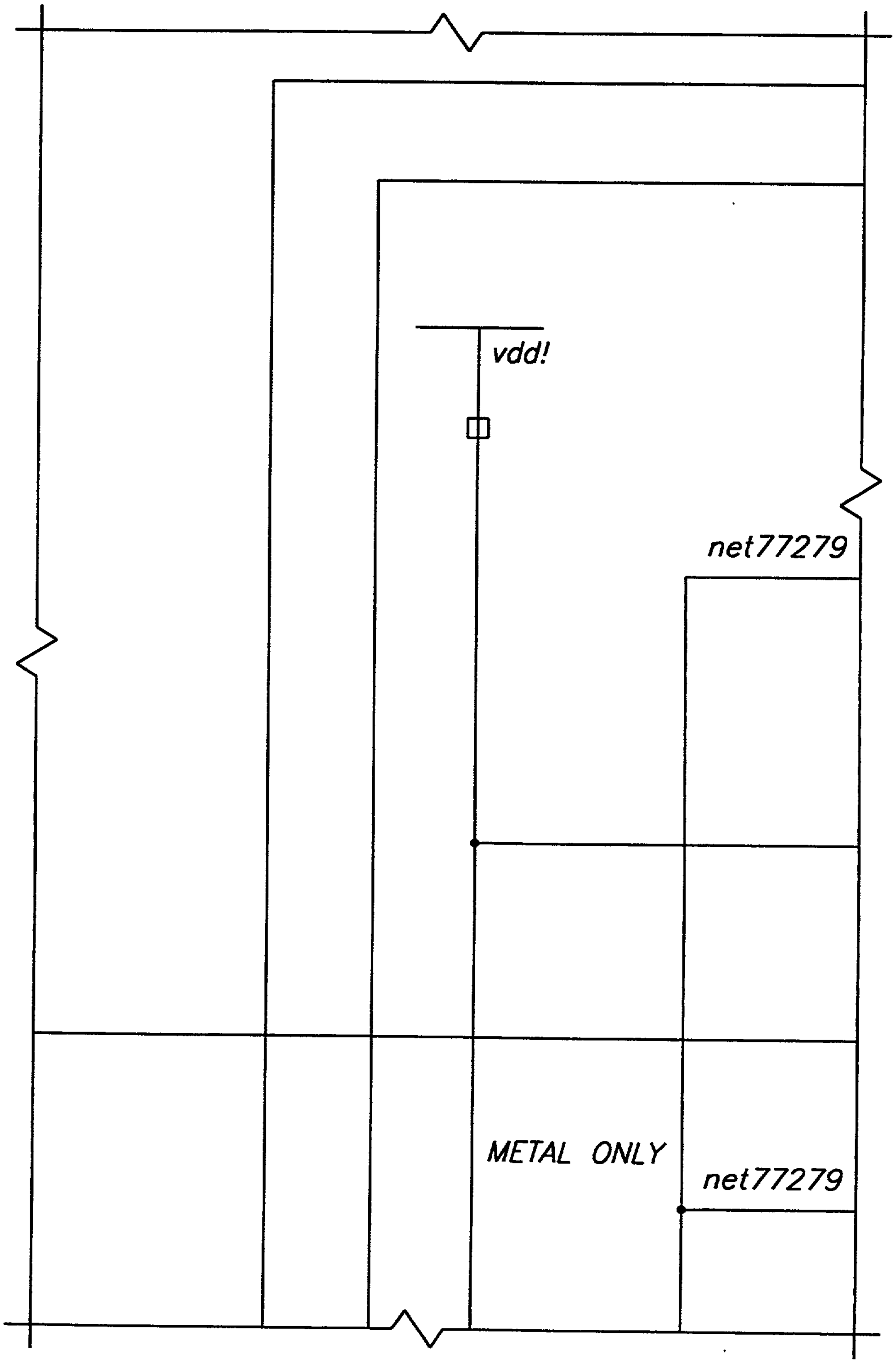


Fig 9.0301BD

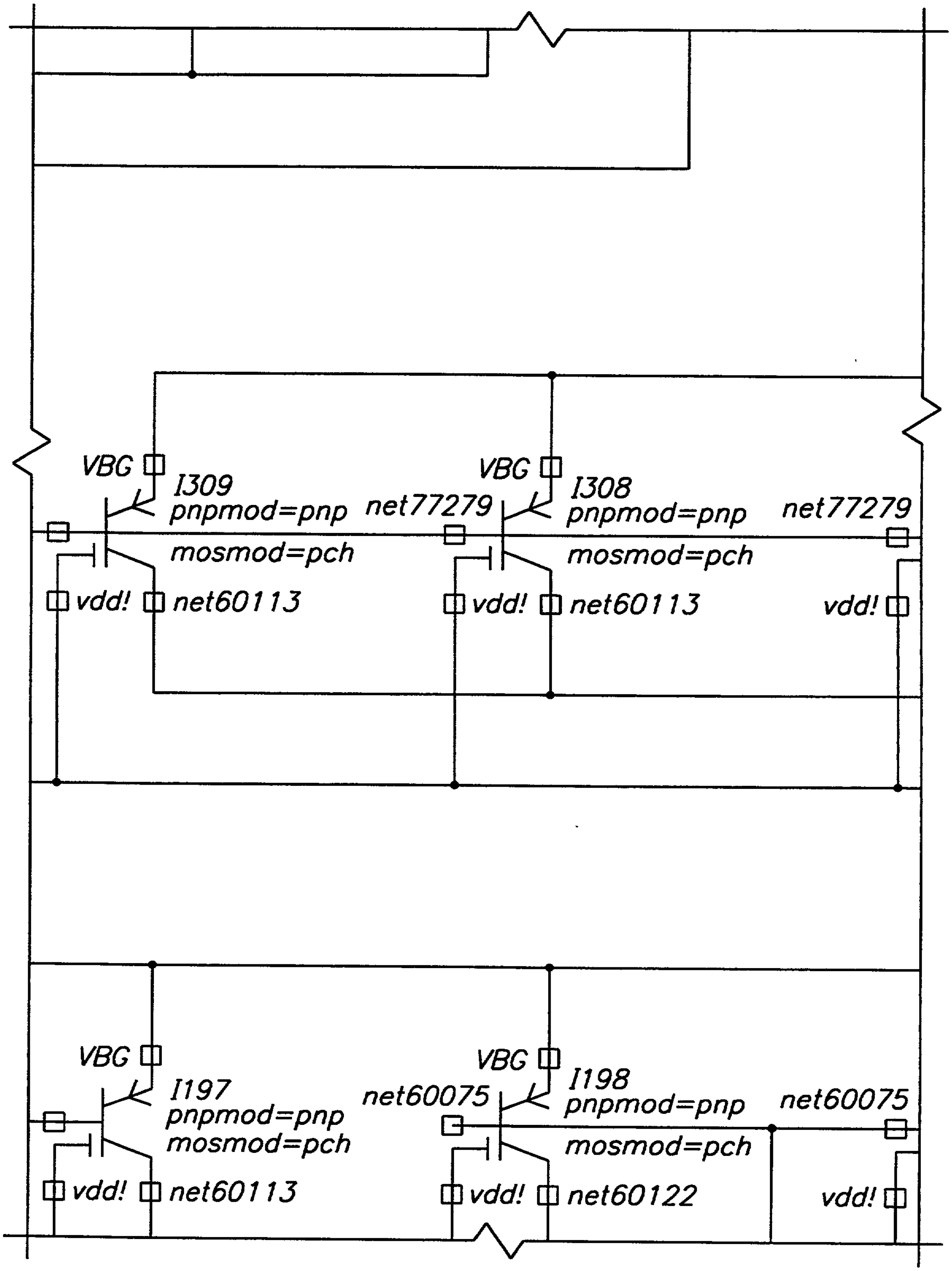

VBG
I309
pnpmod=pnp
mosmod=pch
vdd!
net60113
net77279
VBG
I308
pnpmod=pnp
mosmod=pch
vdd!
net60113
net77279
vdd!
VBG
I197
pnpmod=pnp
mosmod=pch
vdd!
net60113
net60075
VBG
I198
pnpmod=pnp
mosmod=pch
vdd!
net60122
net60075
vdd!

Fig 9.0301BE

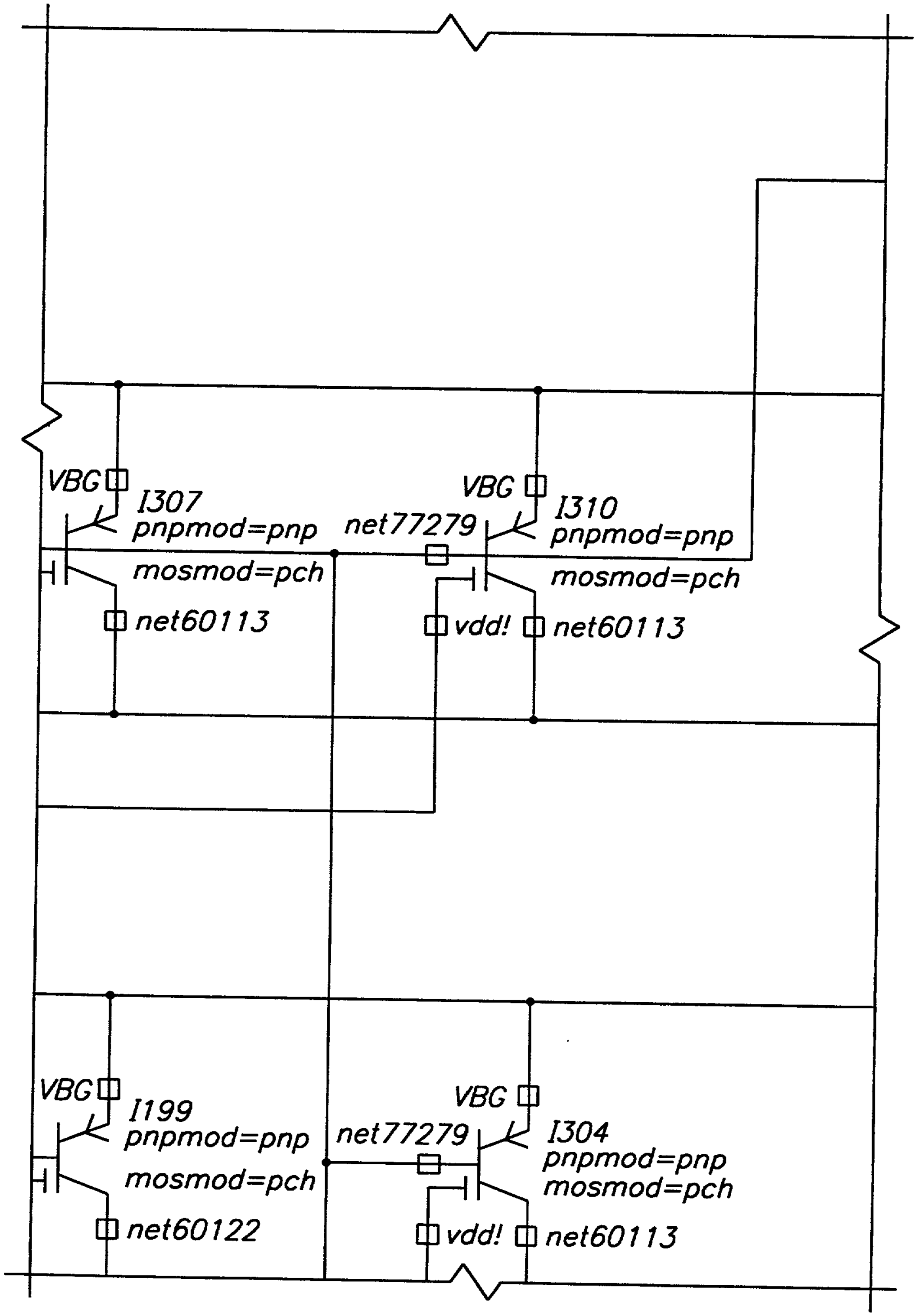

VBG
I307
pnpmod=pnp
mosmod=pch
net60113
net77279
VBG
I310
pnpmod=pnp
mosmod=pch
vdd!
net60113
VBG
I199
pnpmod=pnp
mosmod=pch
net60122
net77279
VBG
I304
pnpmod=pnp
mosmod=pch
vdd!
net60113

Fig 9.0301BF

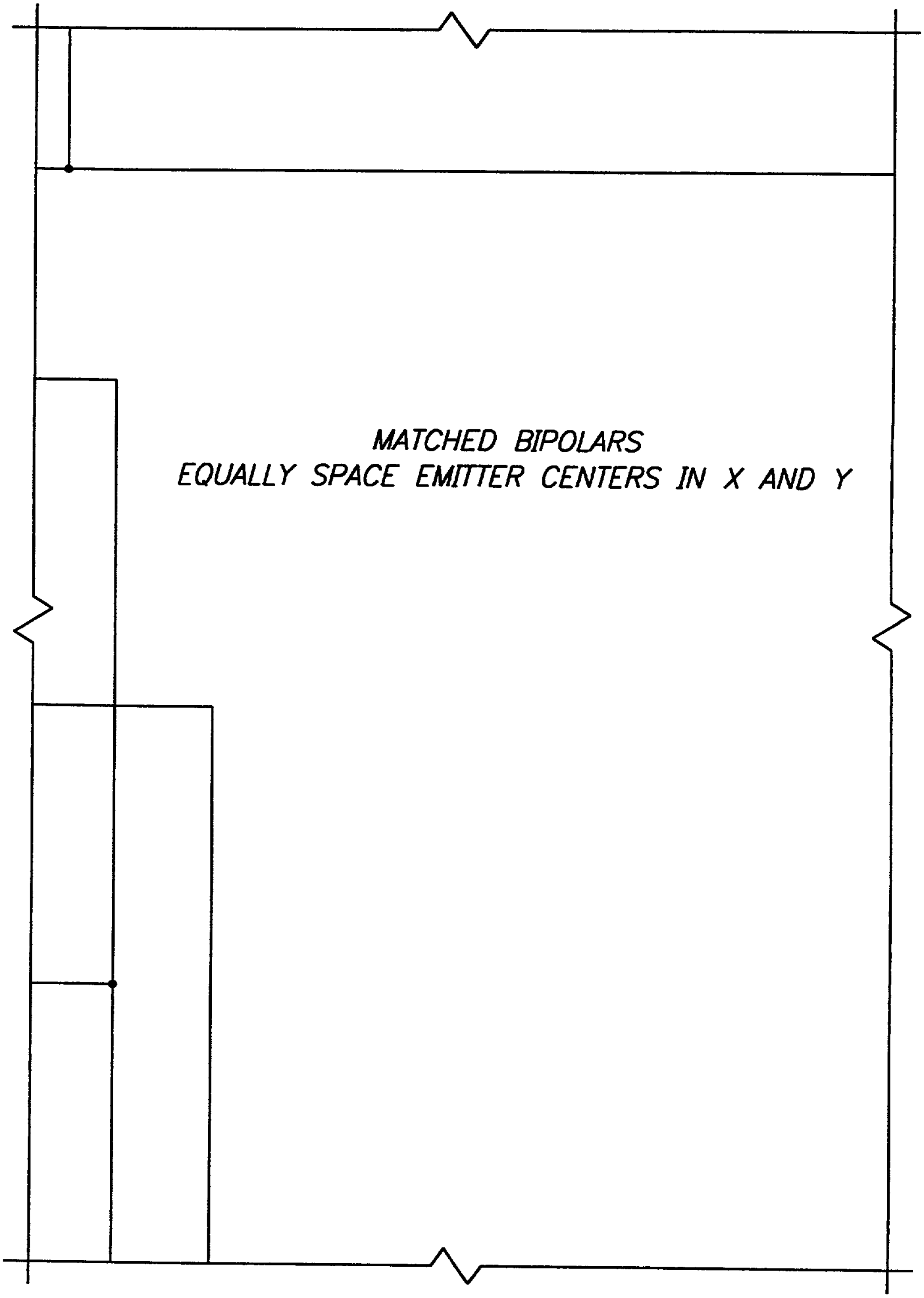


Fig 9.0301BG

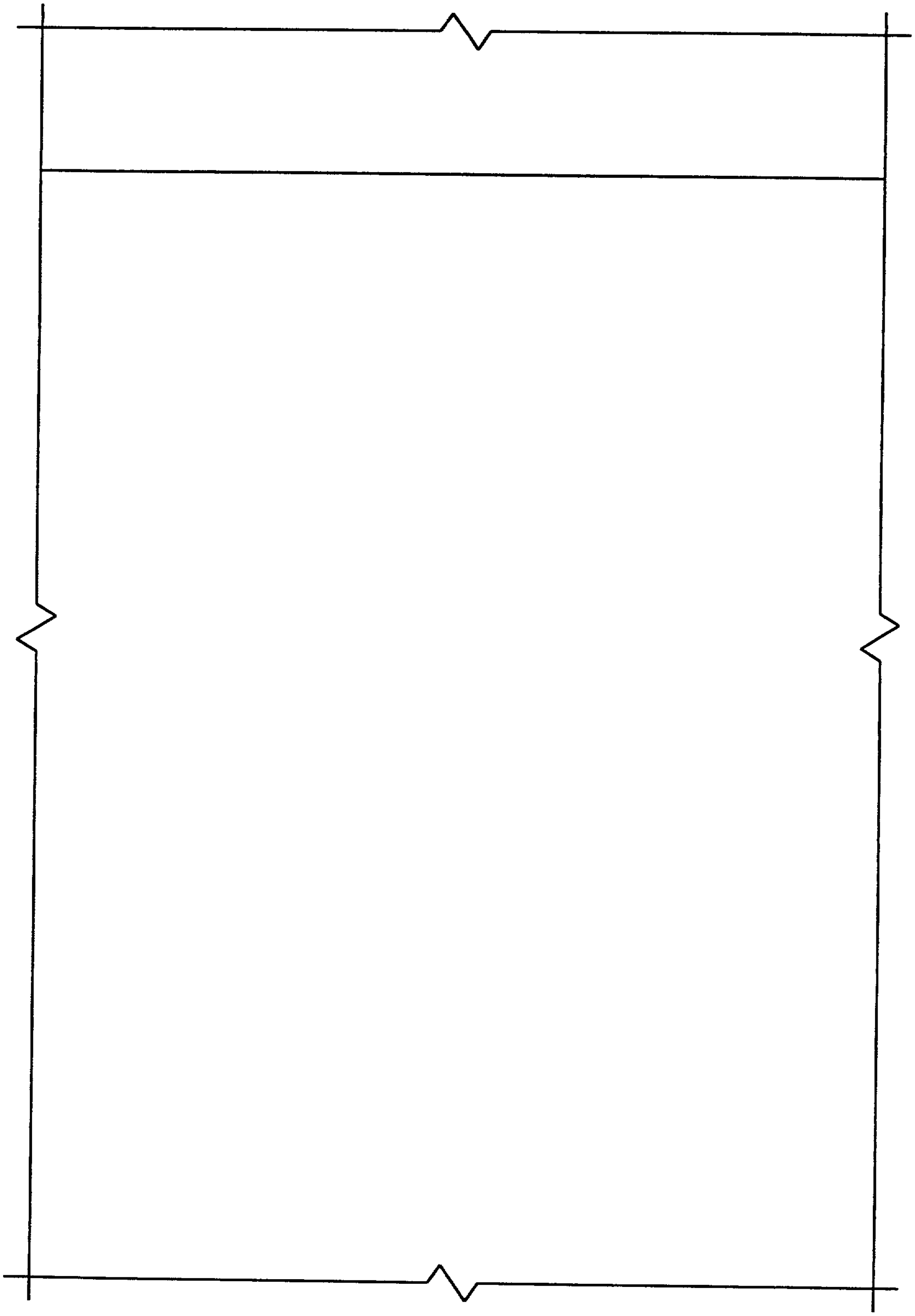


Fig 9.0301BH

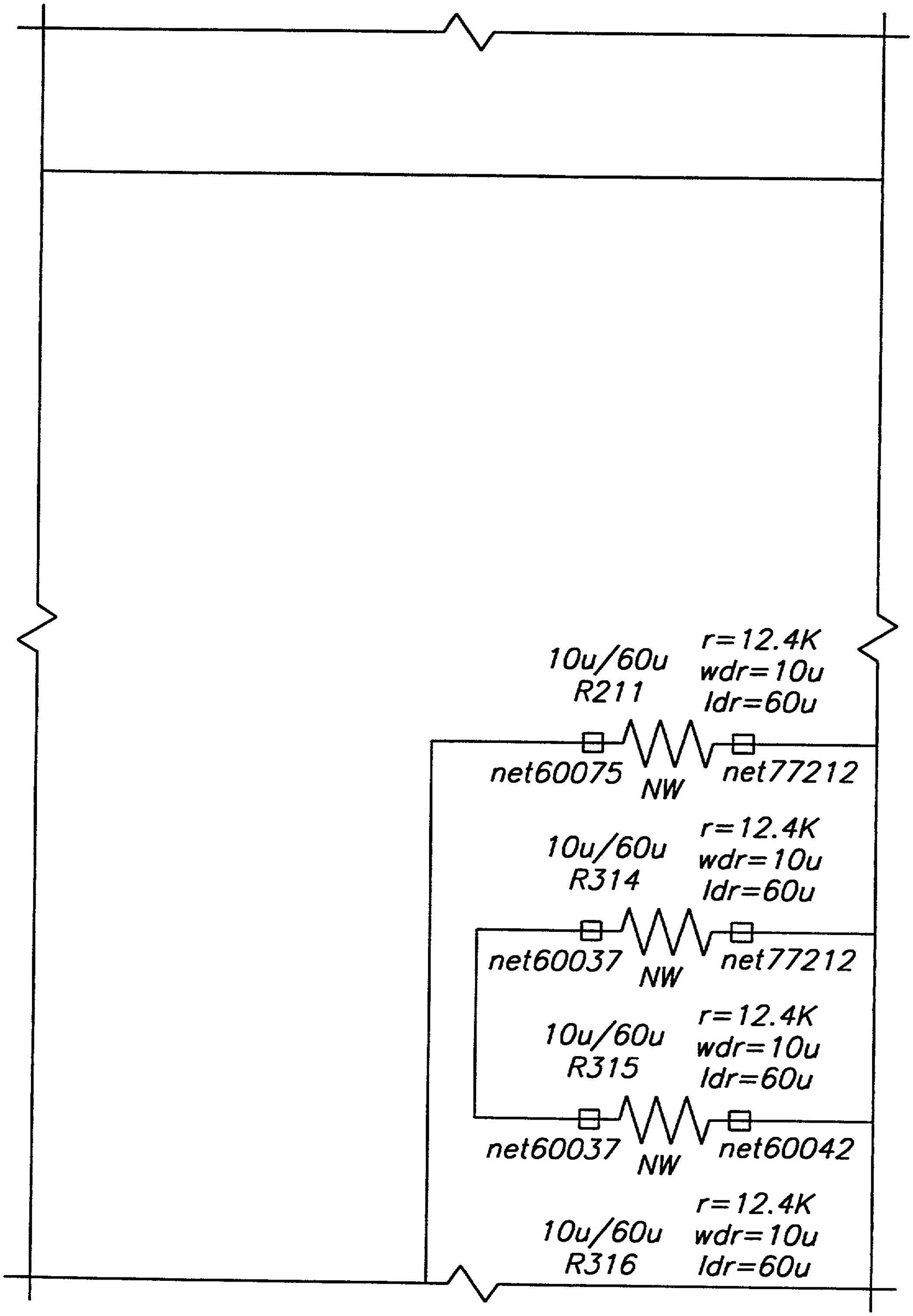

10u/60u
R211
r=12.4K
wdr=10u
ldr=60u
net60075
NW
net77212
10u/60u
R314
r=12.4K
wdr=10u
ldr=60u
net60037
NW
net77212
10u/60u
R315
r=12.4K
wdr=10u
ldr=60u
net60037
NW
net60042
10u/60u
R316
r=12.4K
wdr=10u
ldr=60u

Fig 9.0301BI

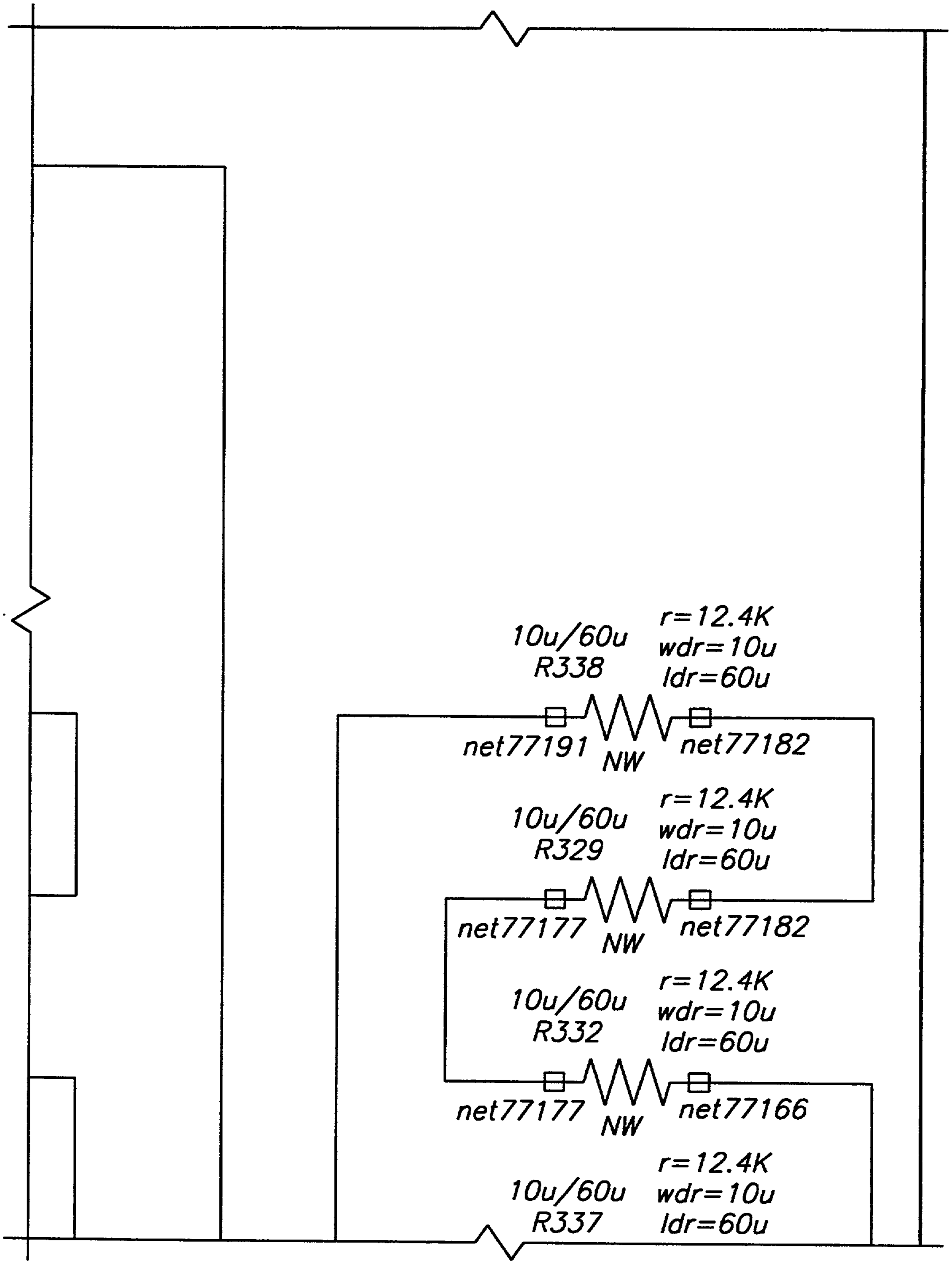

10u/60u
R338
r=12.4K
wdr=10u
ldr=60u
net77191
NW
net77182
10u/60u
R329
r=12.4K
wdr=10u
ldr=60u
net77177
NW
net77182
10u/60u
R332
r=12.4K
wdr=10u
ldr=60u
net77177
NW
net77166
10u/60u
R337
r=12.4K
wdr=10u
ldr=60u

Fig 9.0301B.1

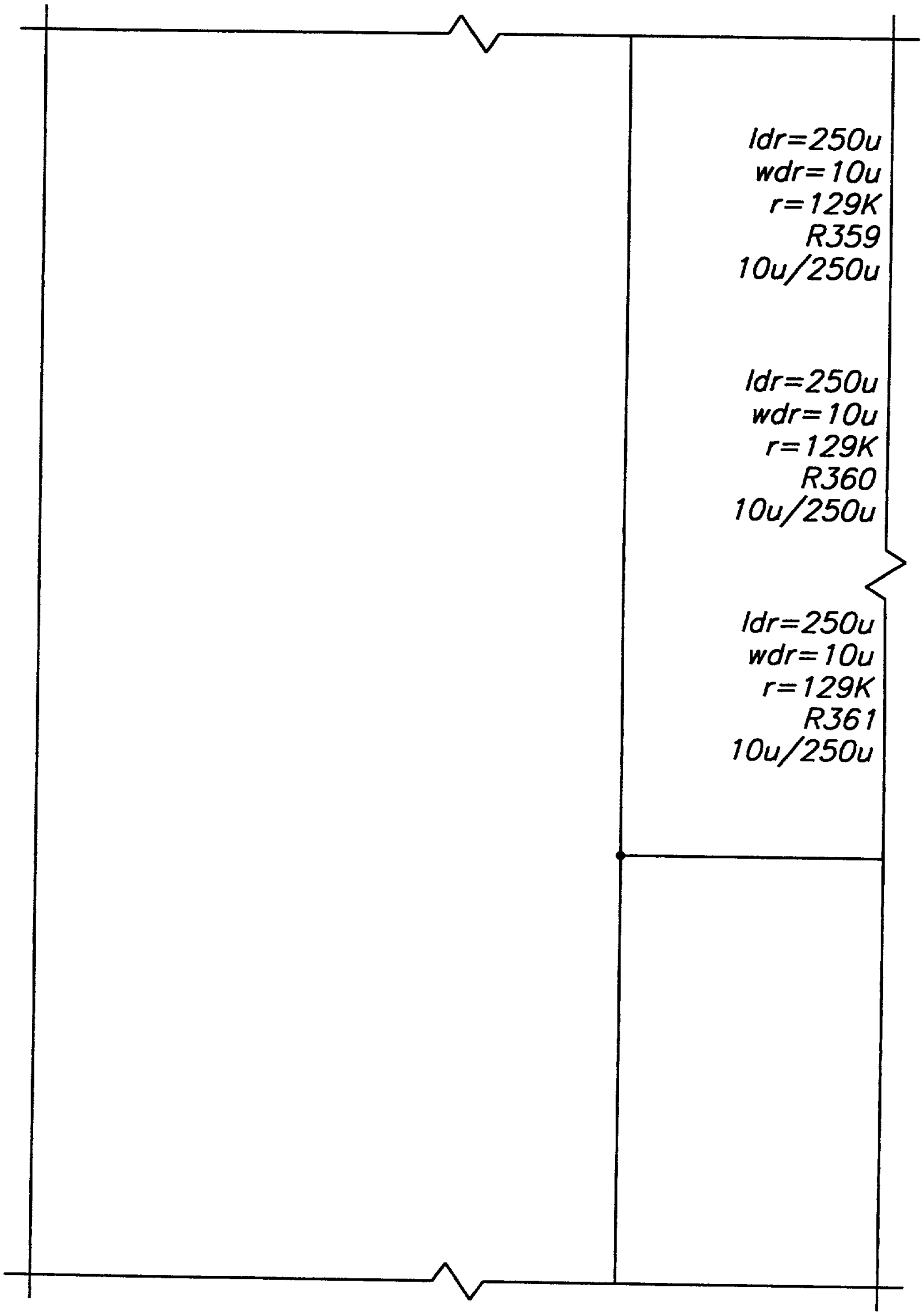

ldr=250u
wdr=10u
r=129K
R359
10u/250u
ldr=250u
wdr=10u
r=129K
R360
10u/250u
ldr=250u
wdr=10u
r=129K
R361
10u/250u

Fig 9.0301CB

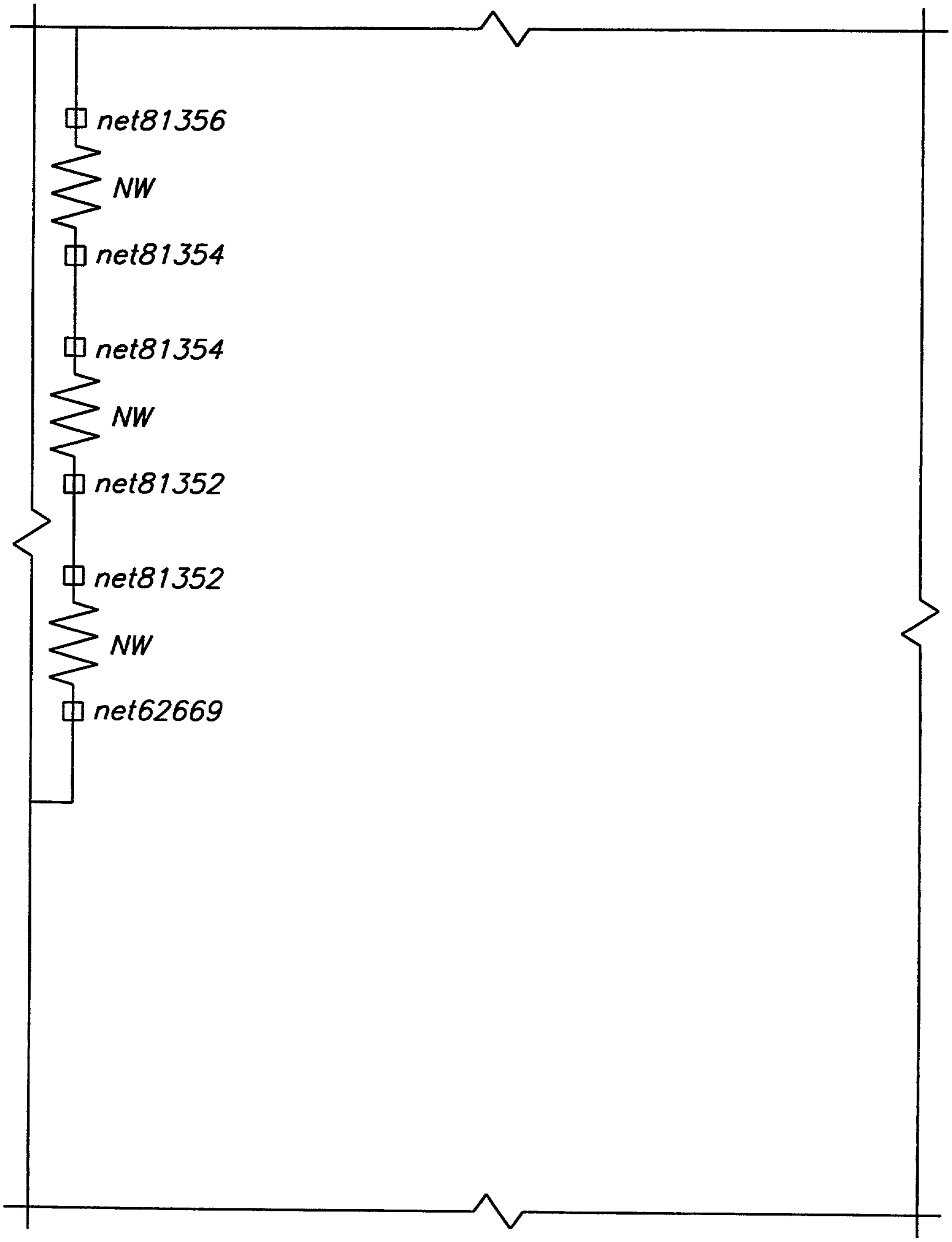

net81356
NW
net81354
net81354
NW
net81352
net81352
NW
net62669

Fig 9.0301CC

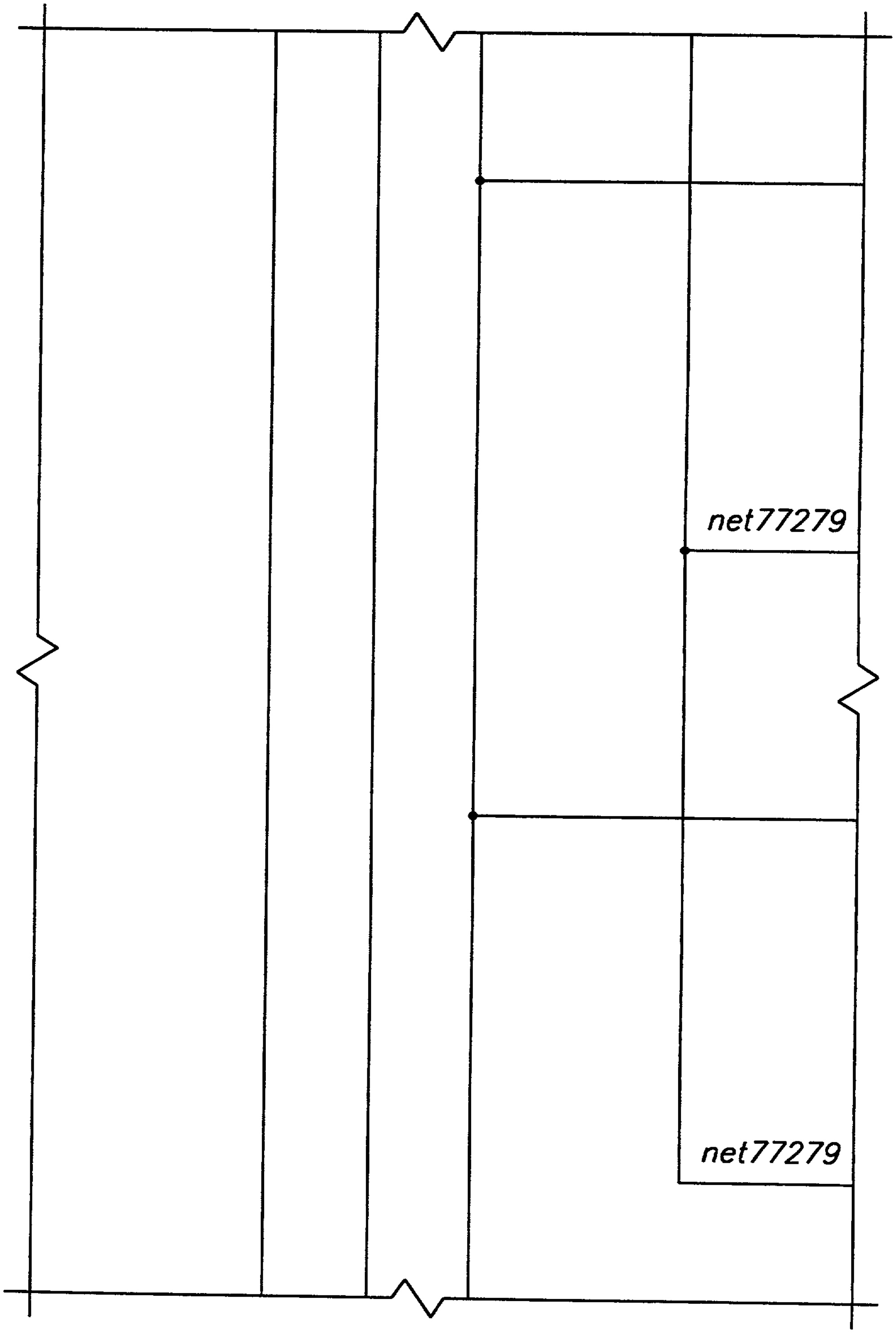


Fig 9.0301CD

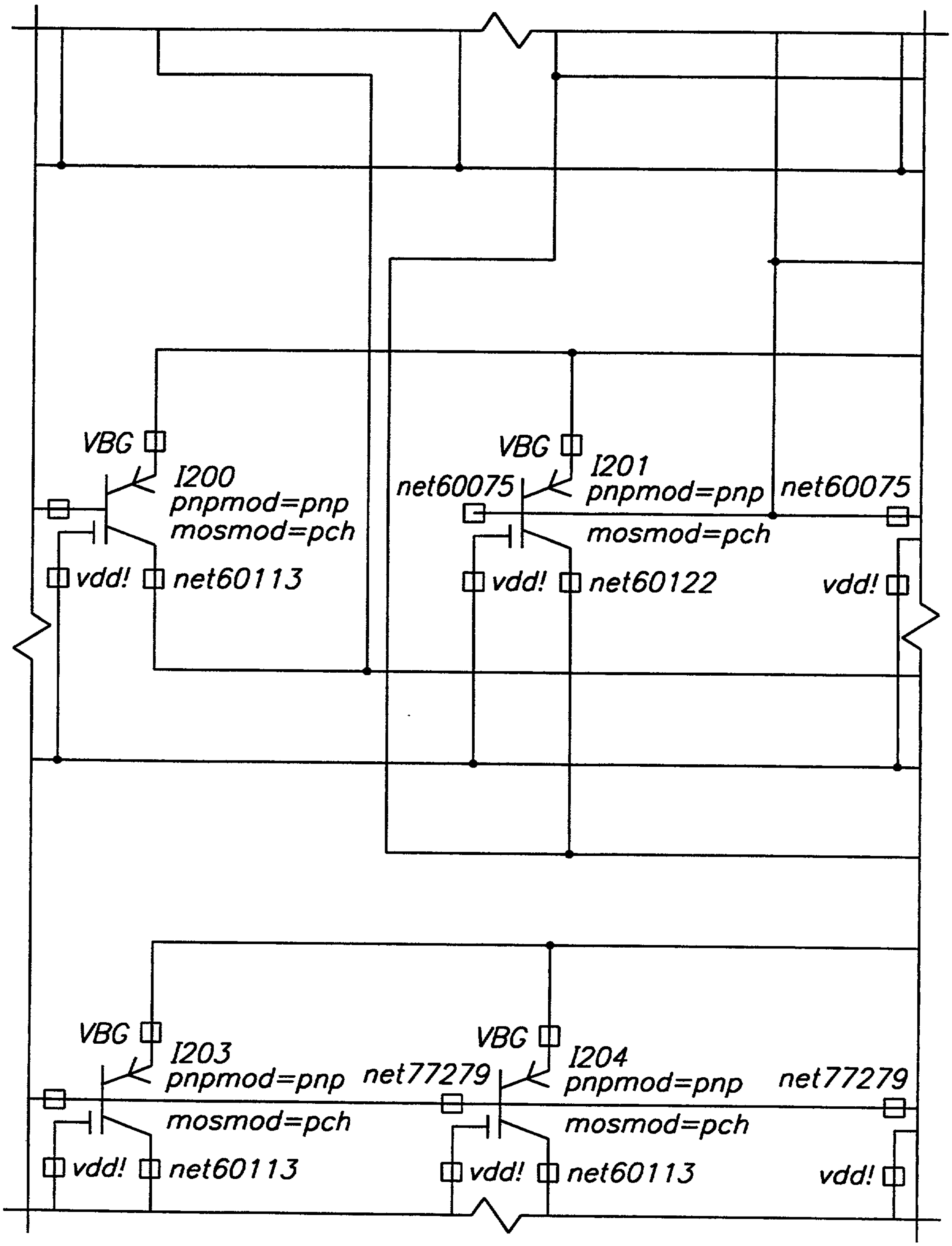

VBG
I200
pnpmod=pnp
mosmod=pch
vdd!
net60113
VBG
net60075
I201
pnpmod=pnp
net60075
mosmod=pch
vdd!
net60122
vdd!
VBG
I203
pnpmod=pnp
mosmod=pch
vdd!
net60113
VBG
net77279
I204
pnpmod=pnp
net77279
mosmod=pch
vdd!
net60113
vdd!

Fig 9.03.01CE

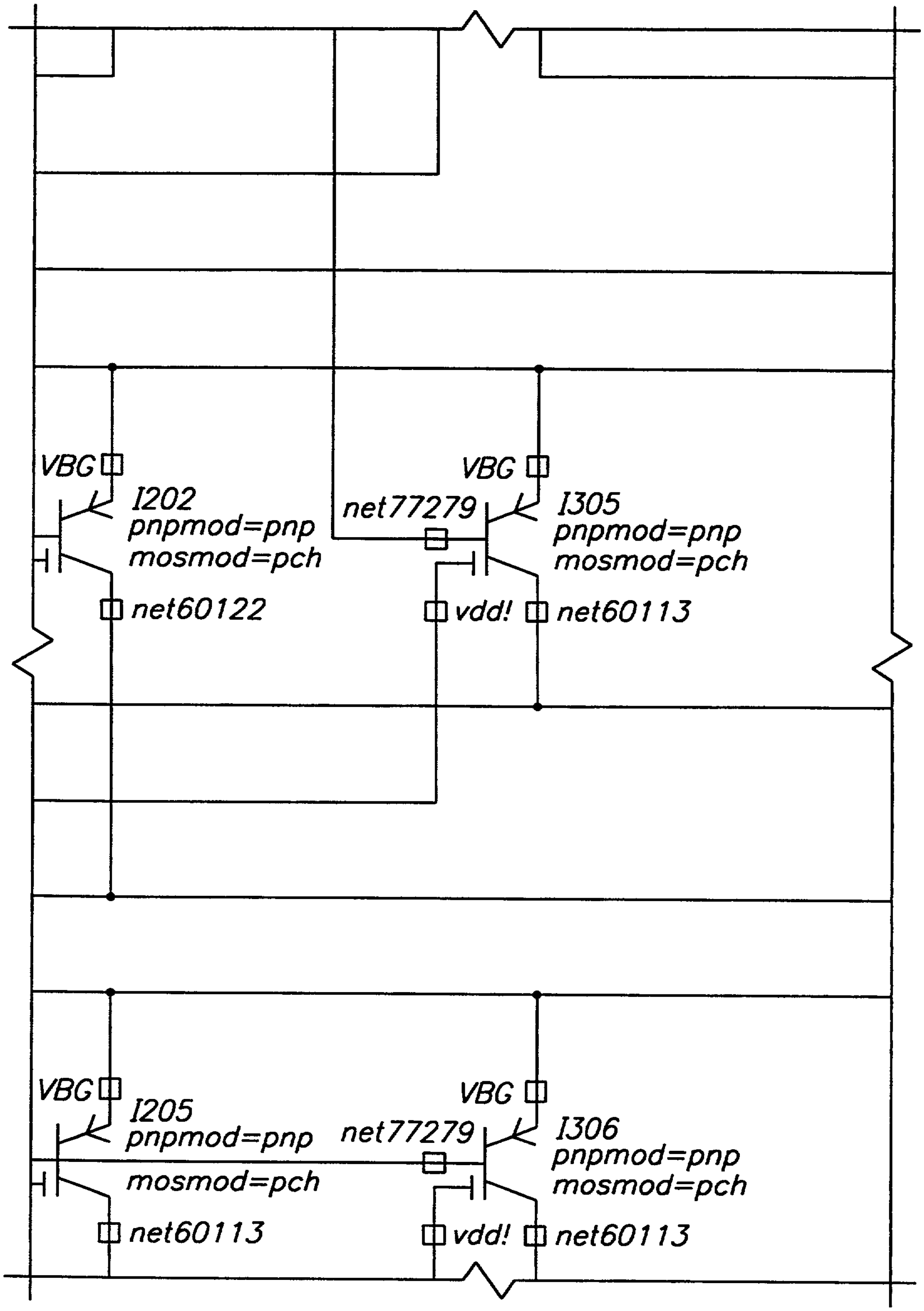

VBG
I202
pnpmod=pnp
mosmod=pch
net60122
VBG
net77279
I305
pnpmod=pnp
mosmod=pch
vdd!
net60113
VBG
I205
pnpmod=pnp
mosmod=pch
net60113
VBG
net77279
I306
pnpmod=pnp
mosmod=pch
vdd!
net60113

Fig 9.0301CF

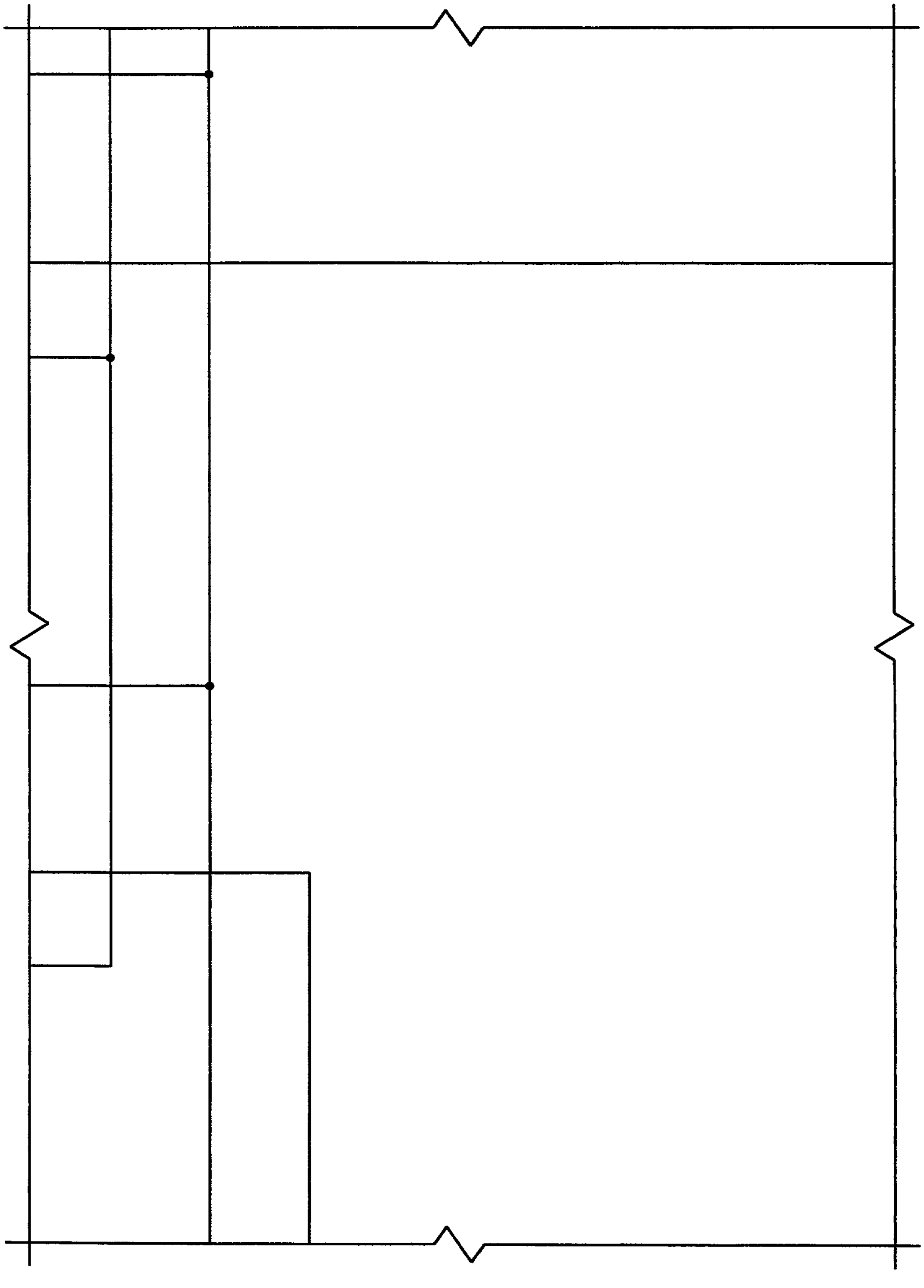


Fig 9.0301CG

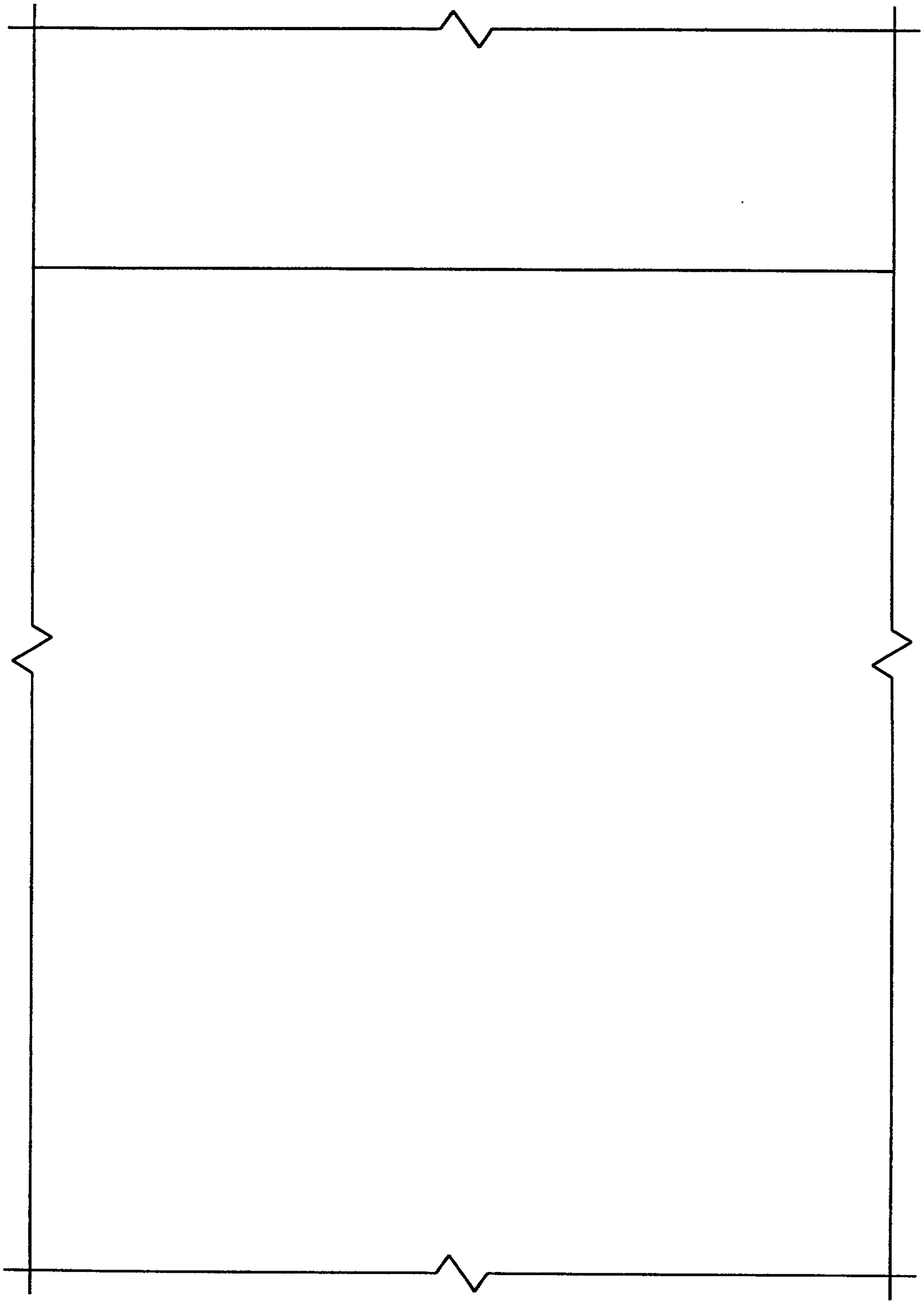


FIG 9.0301CH

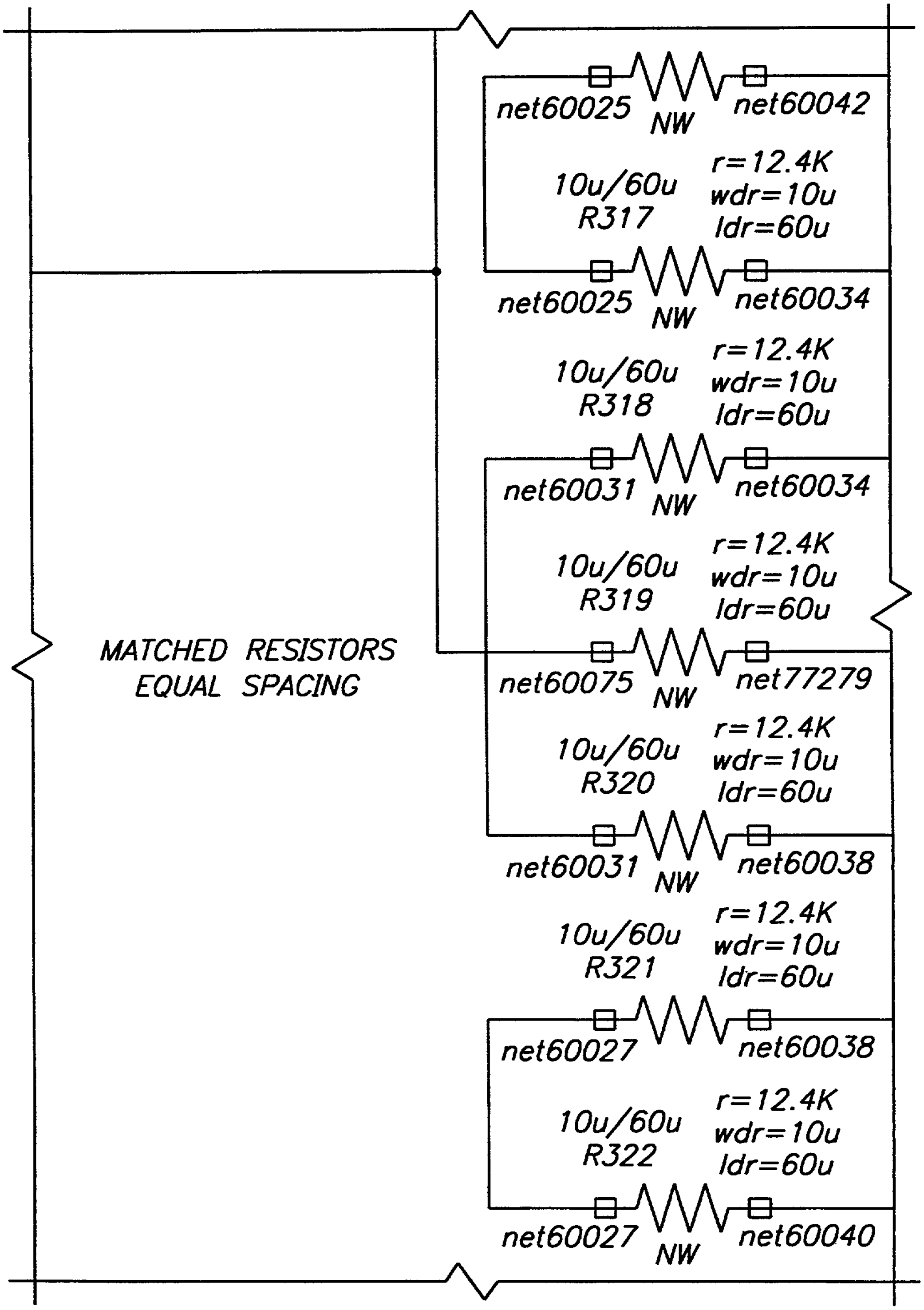

net60025
NW
net60042
10u/60u
R317
r=12.4K
wdr=10u
ldr=60u
net60025
NW
net60034
10u/60u
R318
r=12.4K
wdr=10u
ldr=60u
net60031
NW
net60034
10u/60u
R319
r=12.4K
wdr=10u
ldr=60u
MATCHED RESISTORS
EQUAL SPACING
net60075
NW
net77279
10u/60u
R320
r=12.4K
wdr=10u
ldr=60u
net60031
NW
net60038
10u/60u
R321
r=12.4K
wdr=10u
ldr=60u
net60027
net60038
10u/60u
R322
r=12.4K
wdr=10u
ldr=60u
net60027
NW
net60040

Fig 9.0301C1

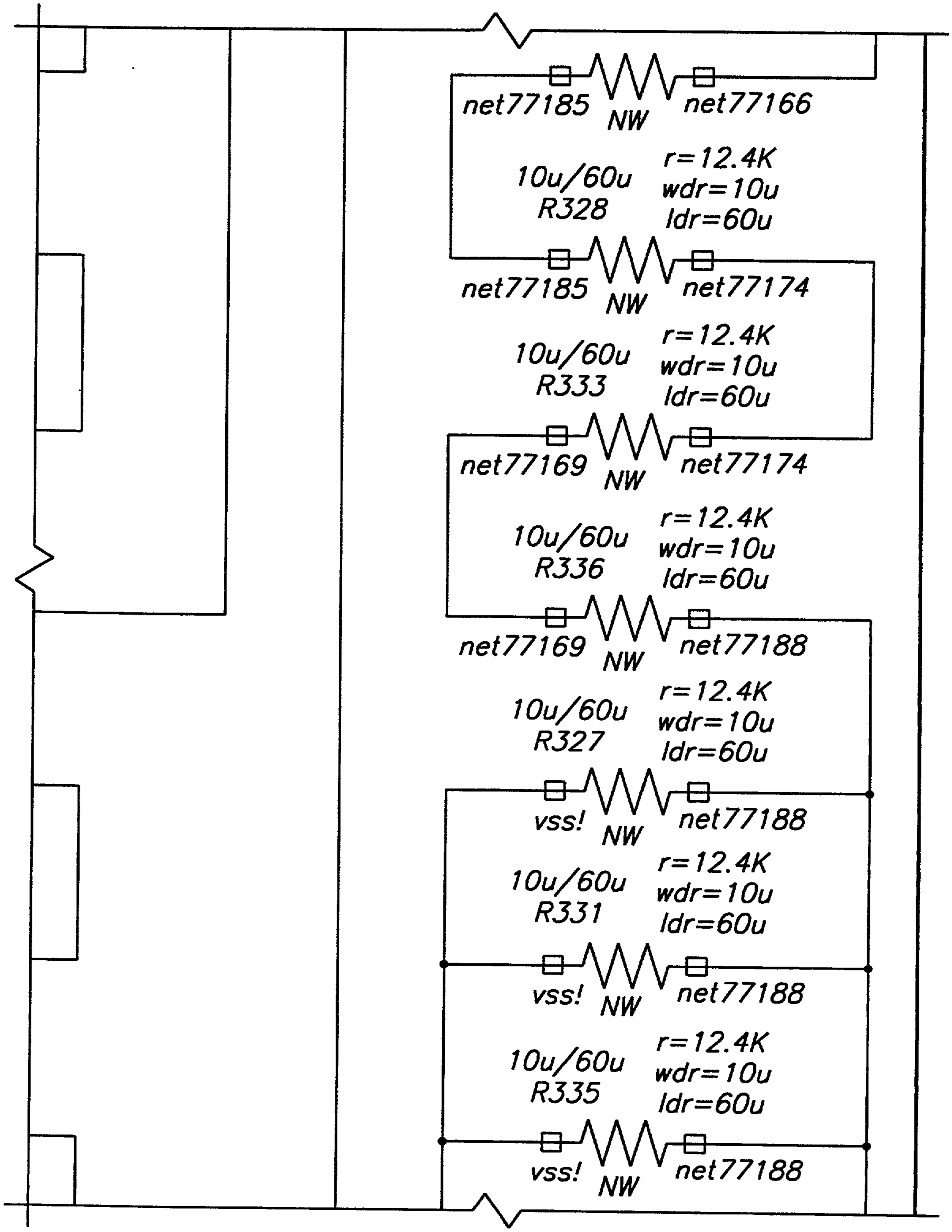

net77185
NW
net77166
10u/60u
R328
r=12.4K
wdr=10u
ldr=60u
net77185
NW
net77174
10u/60u
R333
r=12.4K
wdr=10u
ldr=60u
net77169
NW
net77174
10u/60u
R336
r=12.4K
wdr=10u
ldr=60u
net77169
NW
net77188
10u/60u
R327
r=12.4K
wdr=10u
ldr=60u
vss!
NW
net77188
10u/60u
R331
r=12.4K
wdr=10u
ldr=60u
vss!
NW
net77188
10u/60u
R335
r=12.4K
wdr=10u
ldr=60u
vss!
NW
net77188

Fig 9.0301(a)

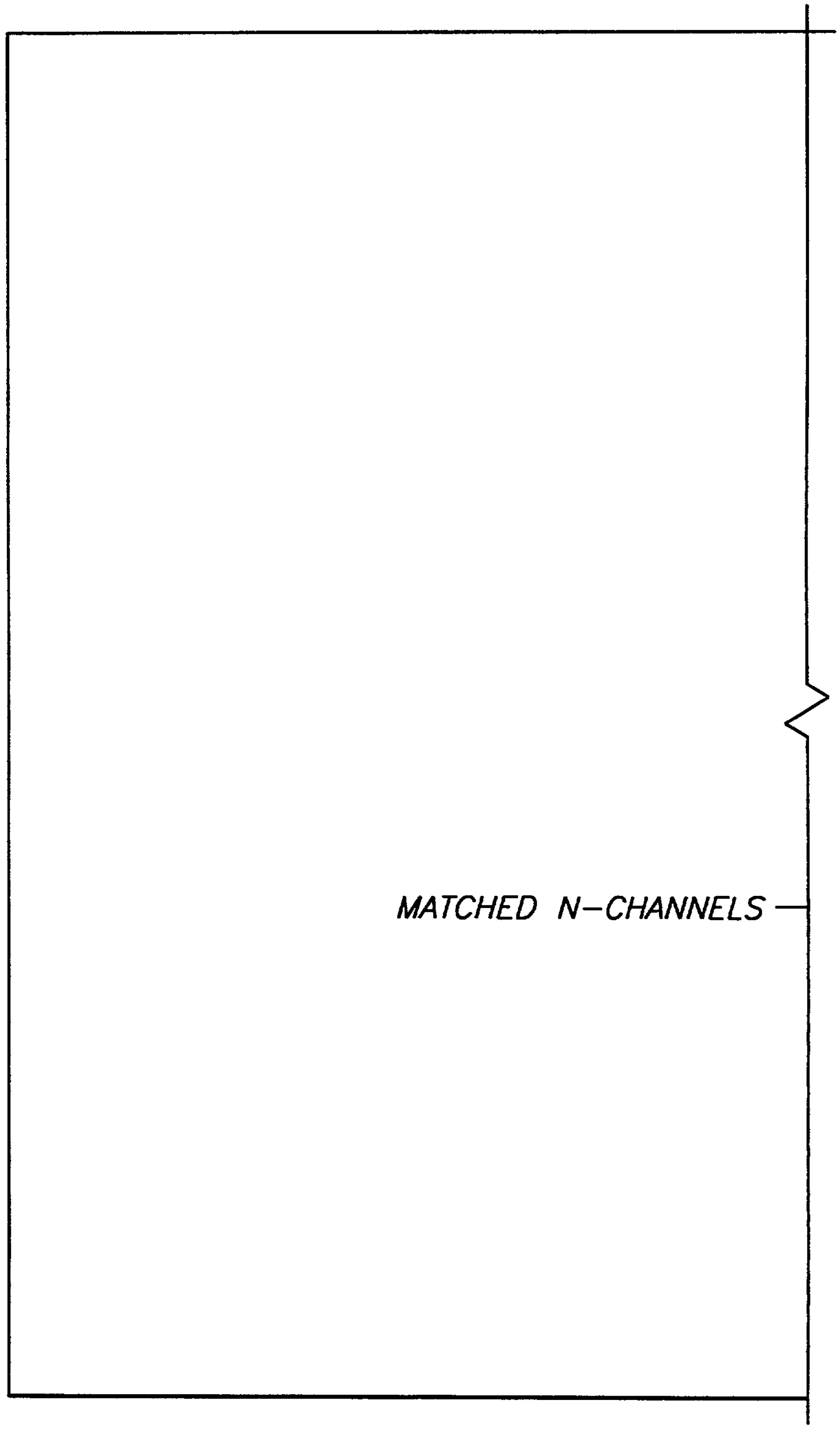


Fig 9.0301DA

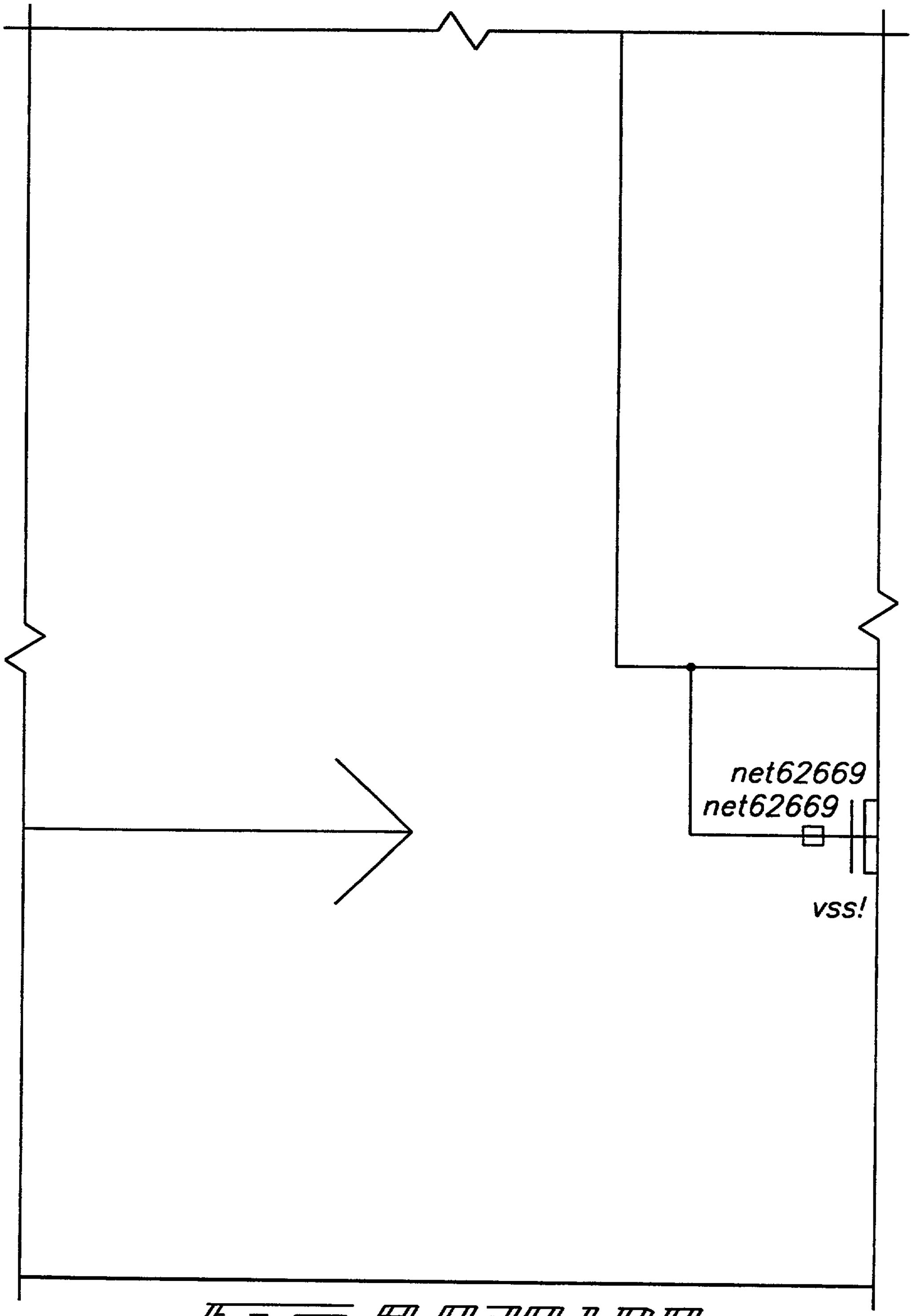


Fig 9.0301DB

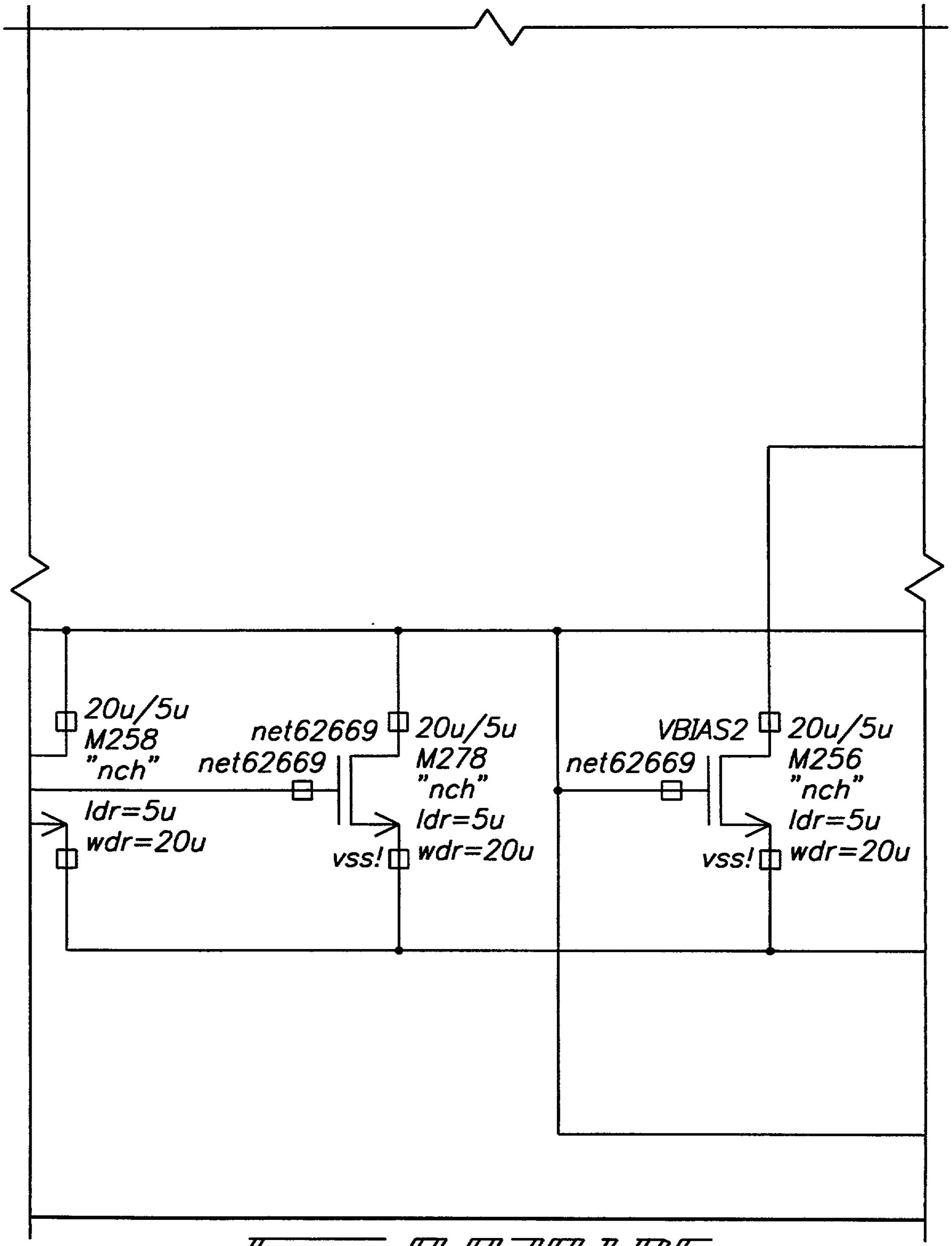

20u/5u
M258
"nch"
ldr=5u
wdr=20u
net62669
net62669
20u/5u
M278
"nch"
ldr=5u
vss!
wdr=20u
VBIAS2
net62669
20u/5u
M256
"nch"
ldr=5u
vss!
wdr=20u

Fig 9.0301DC

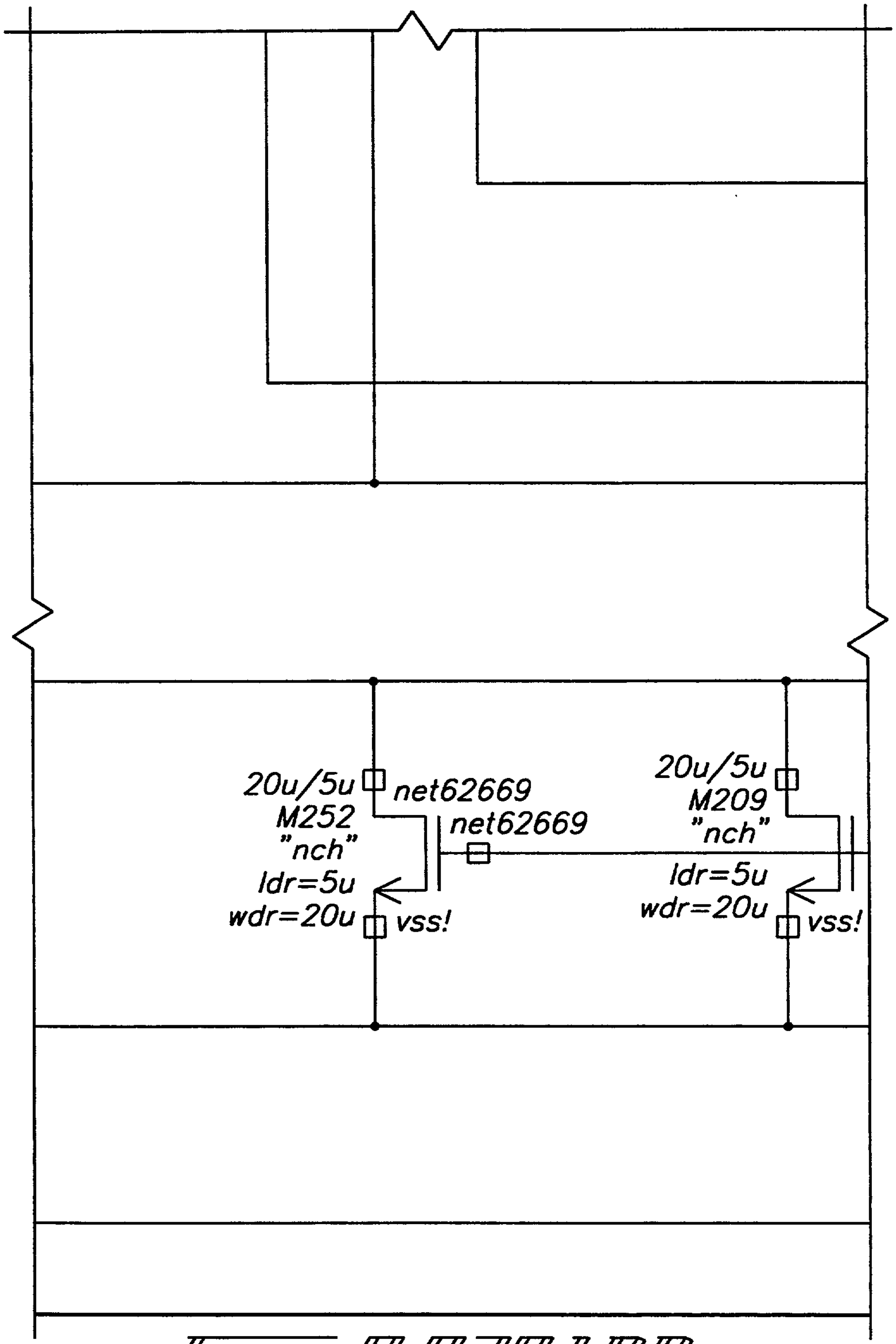

20u/5u
M252
"nch"
ldr=5u
wdr=20u
net62669
net62669
vss!
20u/5u
M209
"nch"
ldr=5u
wdr=20u
vss!

Fig 9.0301DD

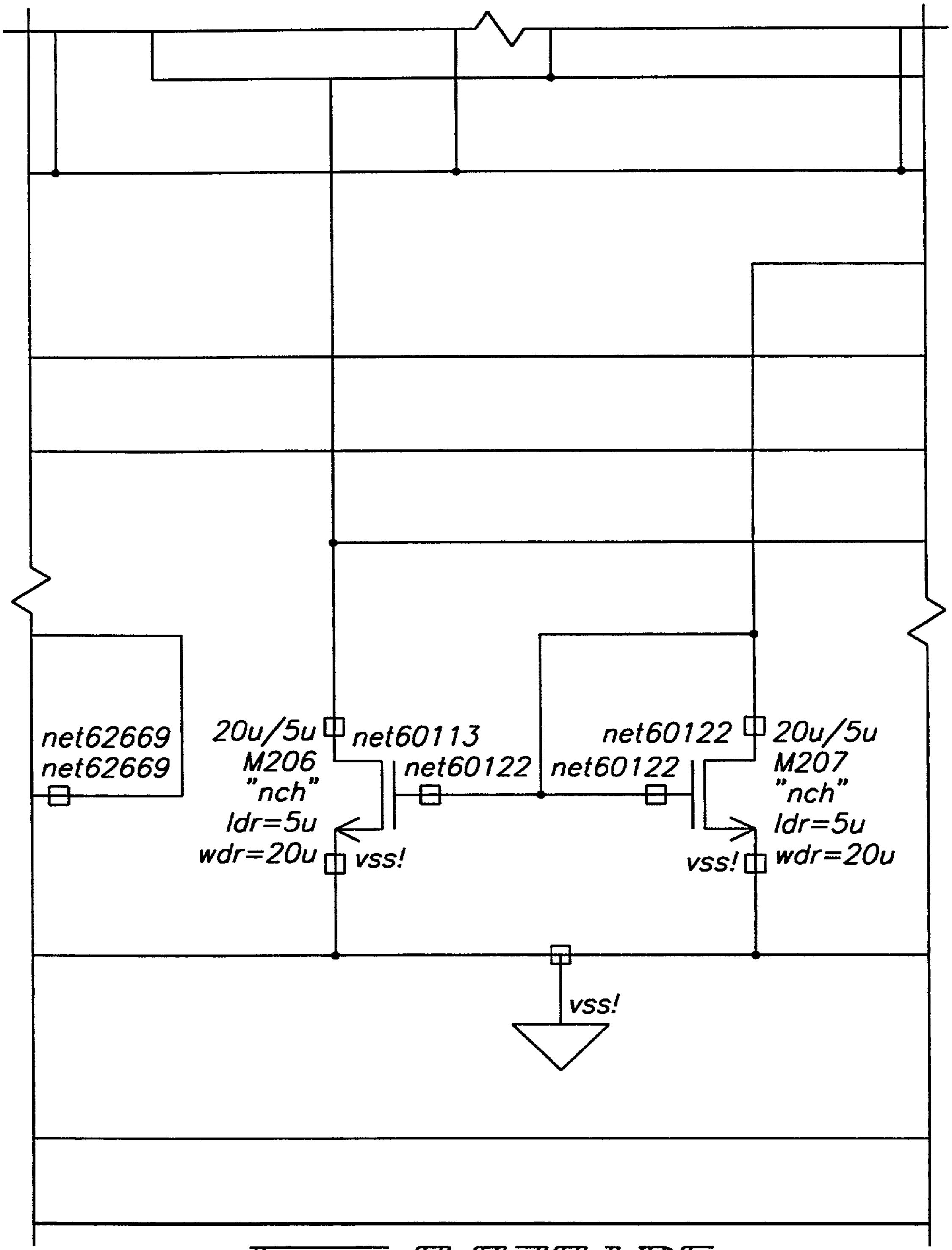

net62669
net62669
20u/5u
M206
"nch"
ldr=5u
wdr=20u
net60113
net60122
vss!
net60122
net60122
20u/5u
M207
"nch"
ldr=5u
wdr=20u
vss!
vss!

Fig 9.0301DE

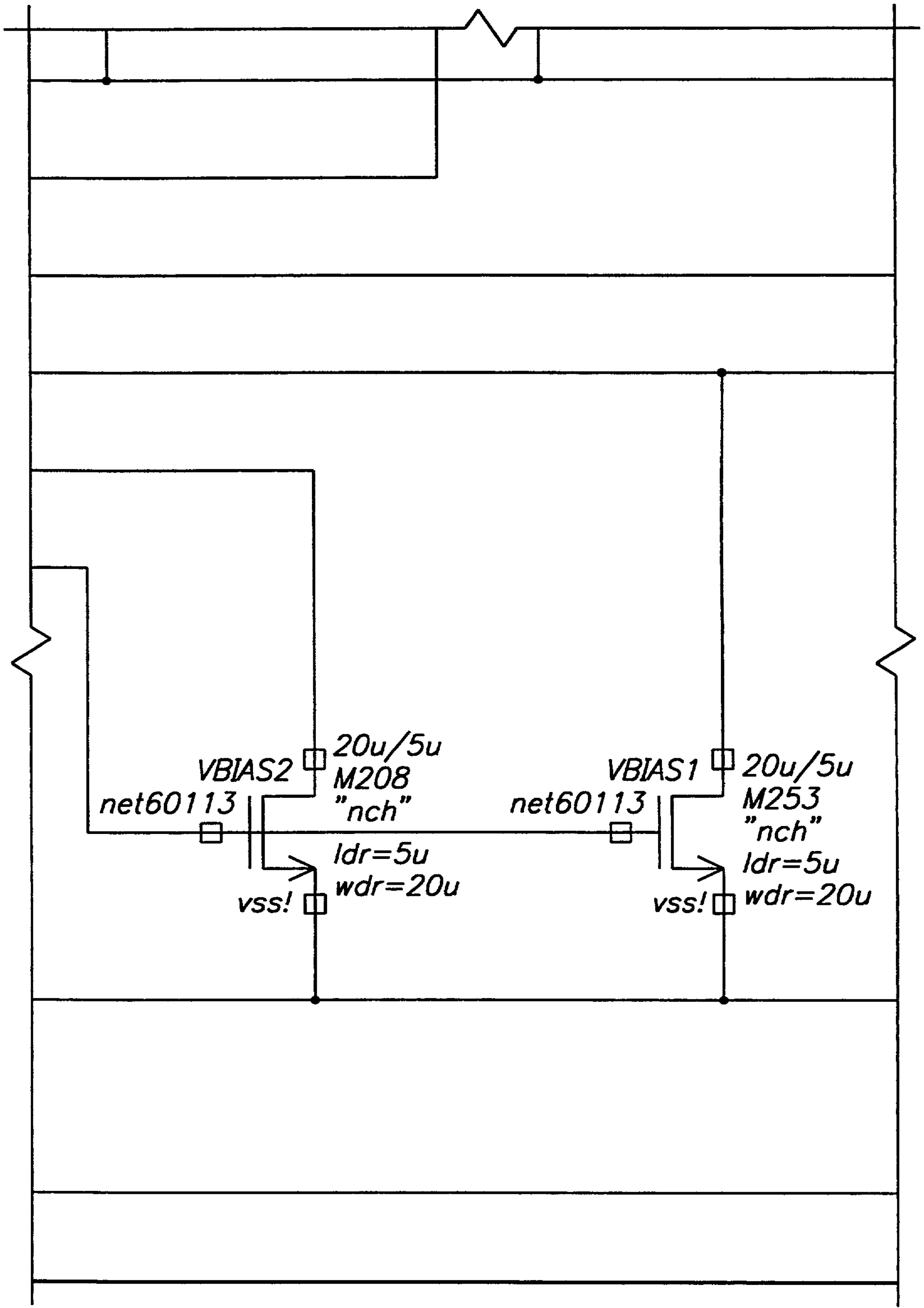

20u/5u
M208
"nch"
VBIAS2
net60113
ldr=5u
wdr=20u
vss!
20u/5u
M253
"nch"
VBIAS1
net60113
ldr=5u
wdr=20u
vss!

Fig 9.0301DF

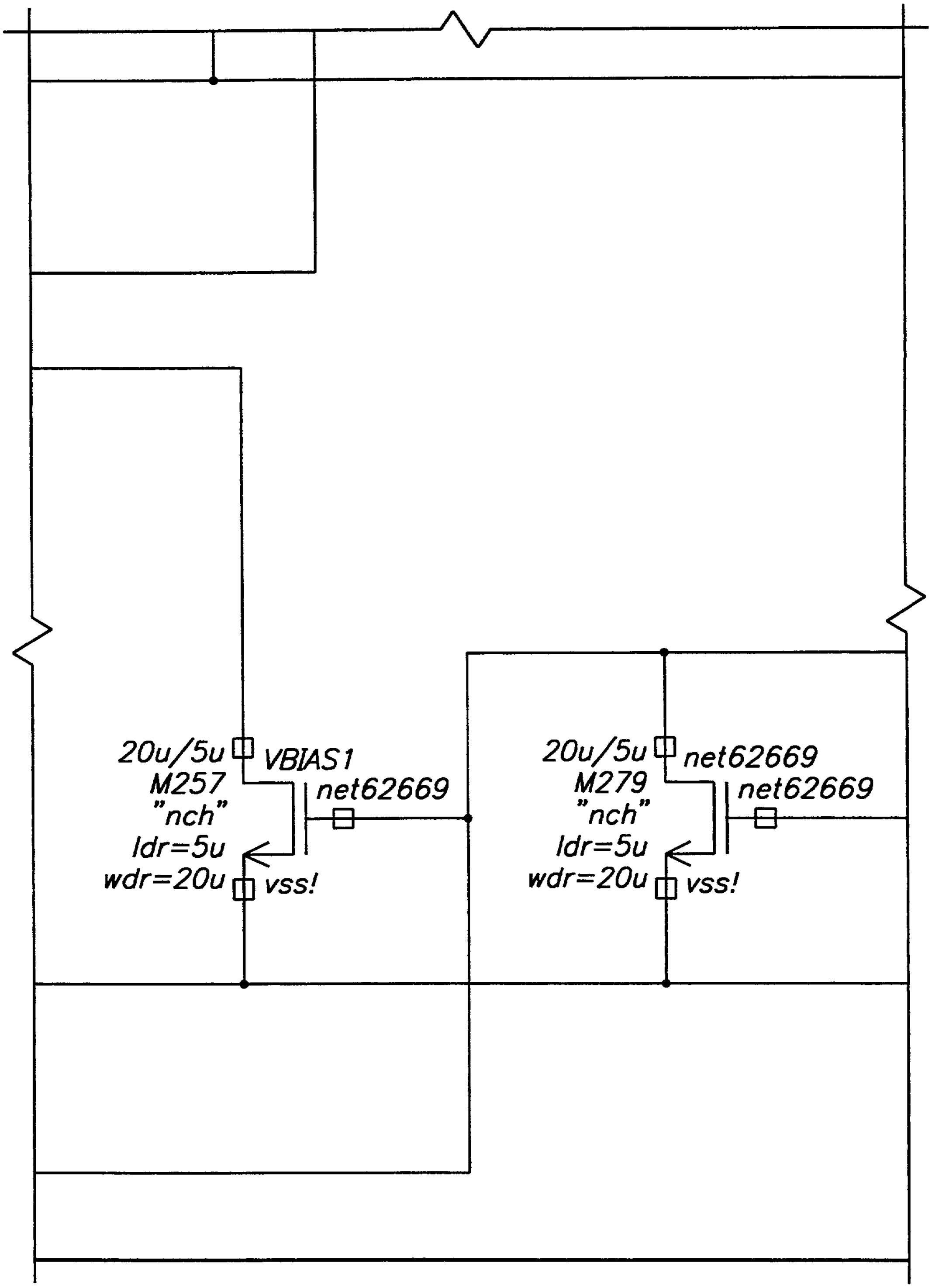

20u/5u
M257
"nch"
ldr=5u
wdr=20u
VBIAS1
net62669
vss!
20u/5u
M279
"nch"
ldr=5u
wdr=20u
net62669
net62669
vss!

Fig 9.0301DG

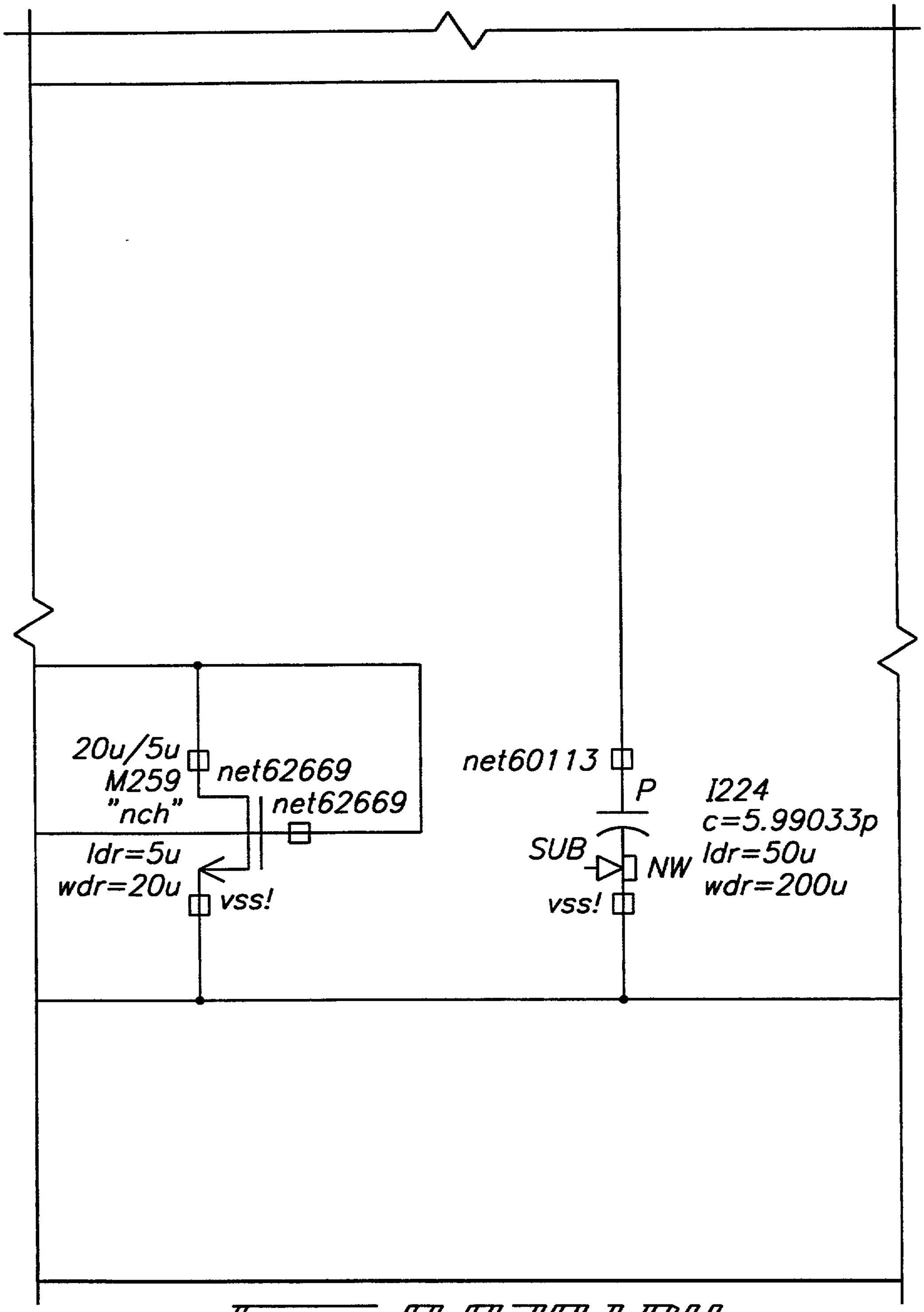

20u/5u
M259
"nch"
ldr=5u
wdr=20u
net62669
net62669
vss!
net60113
P
SUB
NW
vss!
I224
c=5.99033p
ldr=50u
wdr=200u

Fig 9.0301DH

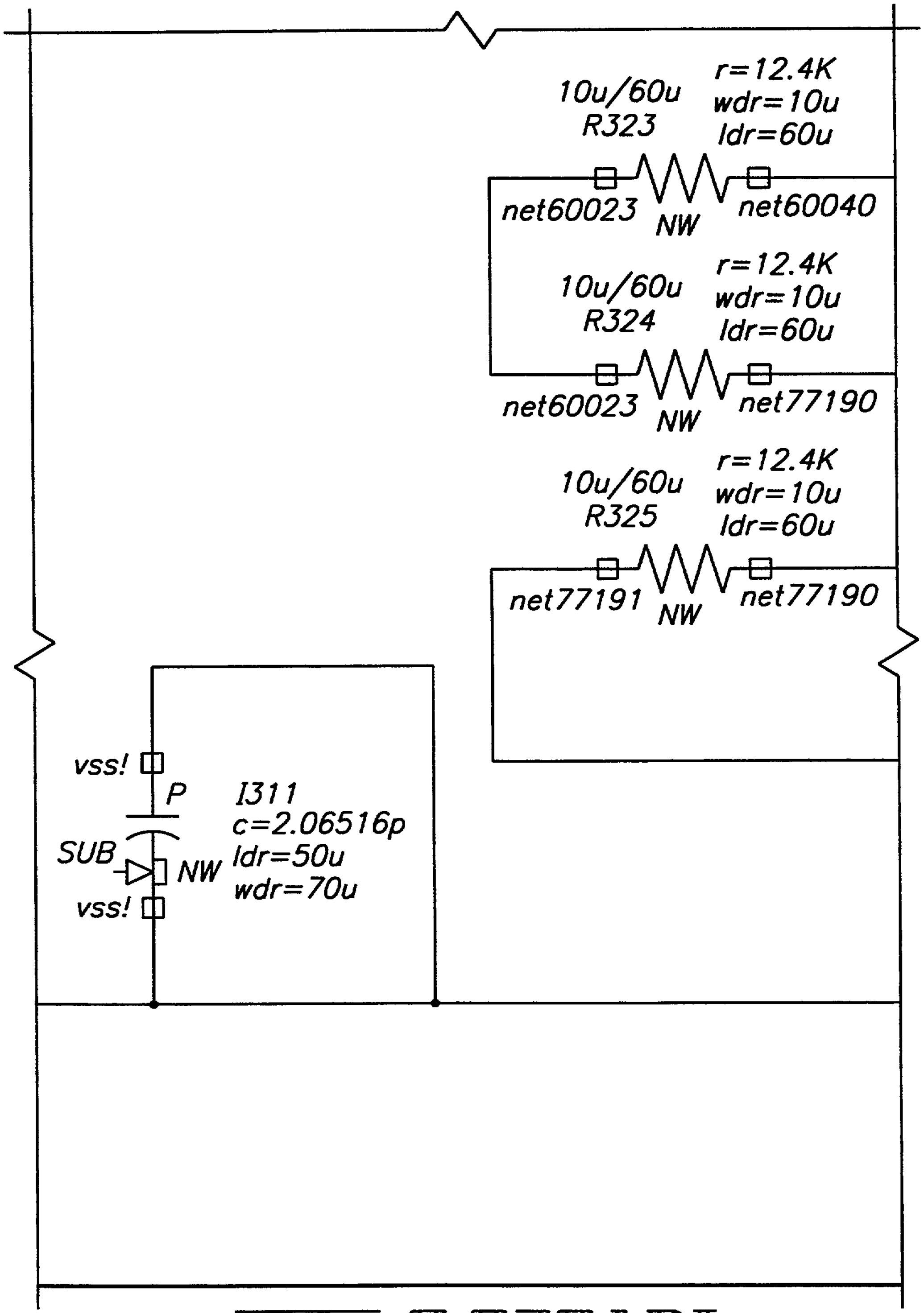

10u/60u
R323
r=12.4K
wdr=10u
ldr=60u
net60023
NW
net60040
10u/60u
R324
r=12.4K
wdr=10u
ldr=60u
net60023
NW
net77190
10u/60u
R325
r=12.4K
wdr=10u
ldr=60u
net77191
NW
net77190
vss!
P
SUB
NW
vss!
I311
c=2.06516p
ldr=50u
wdr=70u

Fig 9.0301D1

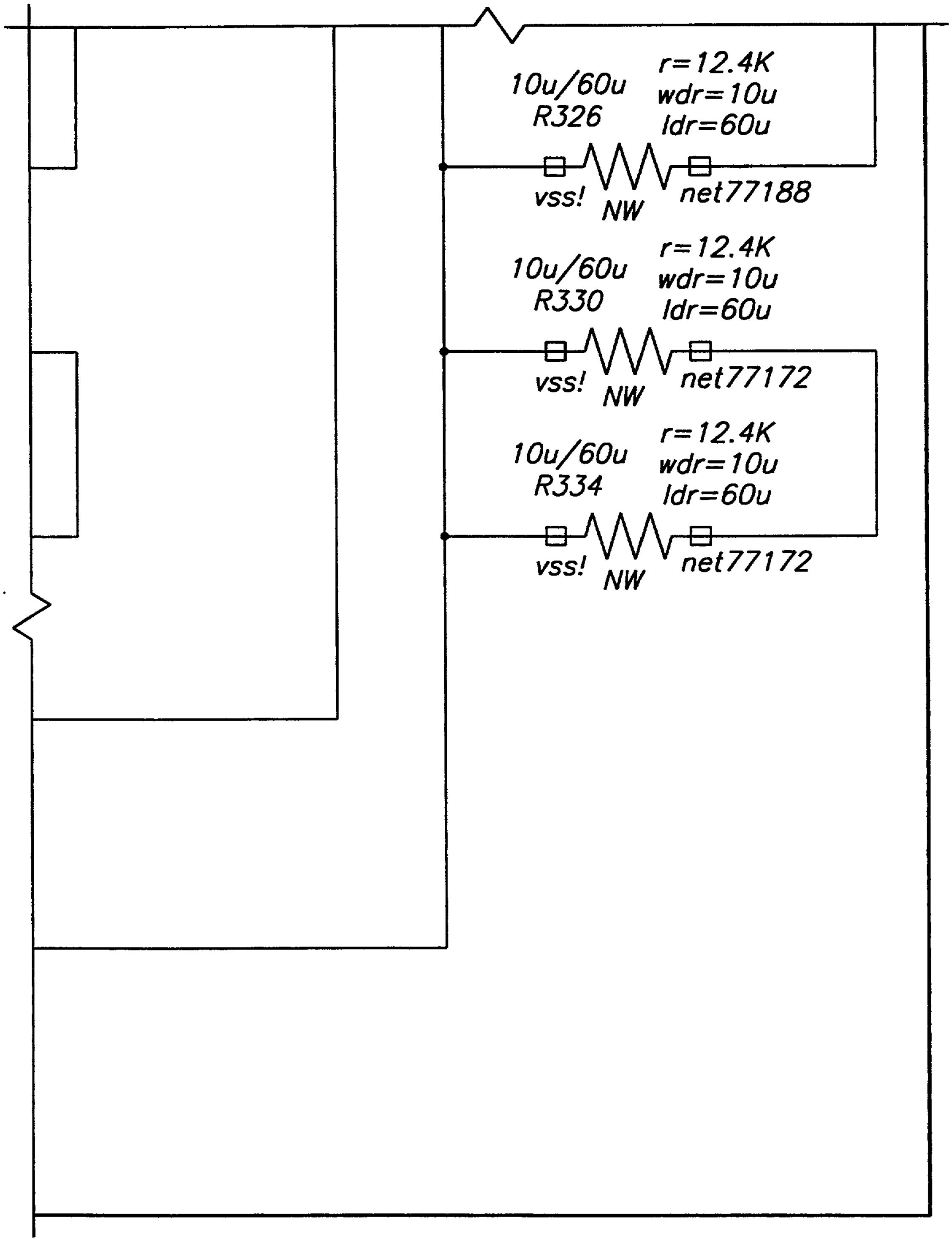

10u/60u
R326
r=12.4K
wdr=10u
ldr=60u
vss!
NW
net77188
10u/60u
R330
r=12.4K
wdr=10u
ldr=60u
vss!
NW
net77172
10u/60u
R334
r=12.4K
wdr=10u
ldr=60u
vss!
NW
net77172

Fig 9.0301Dd

9.0302AA	9.0302AB	9.0302AC	9.0302AD	9.0302AE	9.0302AF	9.0302AG	9.0302AH	9.0302AI	9.0302AJ
9.0302BA	9.0302BB	9.0302BC	9.0302BD	9.0302BE	9.0302BF	9.0302BG	9.0302BH	9.0302BI	9.0302BJ
		9.0302CC	9.0302CD	9.0302CE	9.0302CF	9.0302CG	9.0302CH	9.0302CI	9.0302CJ
						9.0302DG	9.0302DH	9.0302DI	

Fig 9.0302

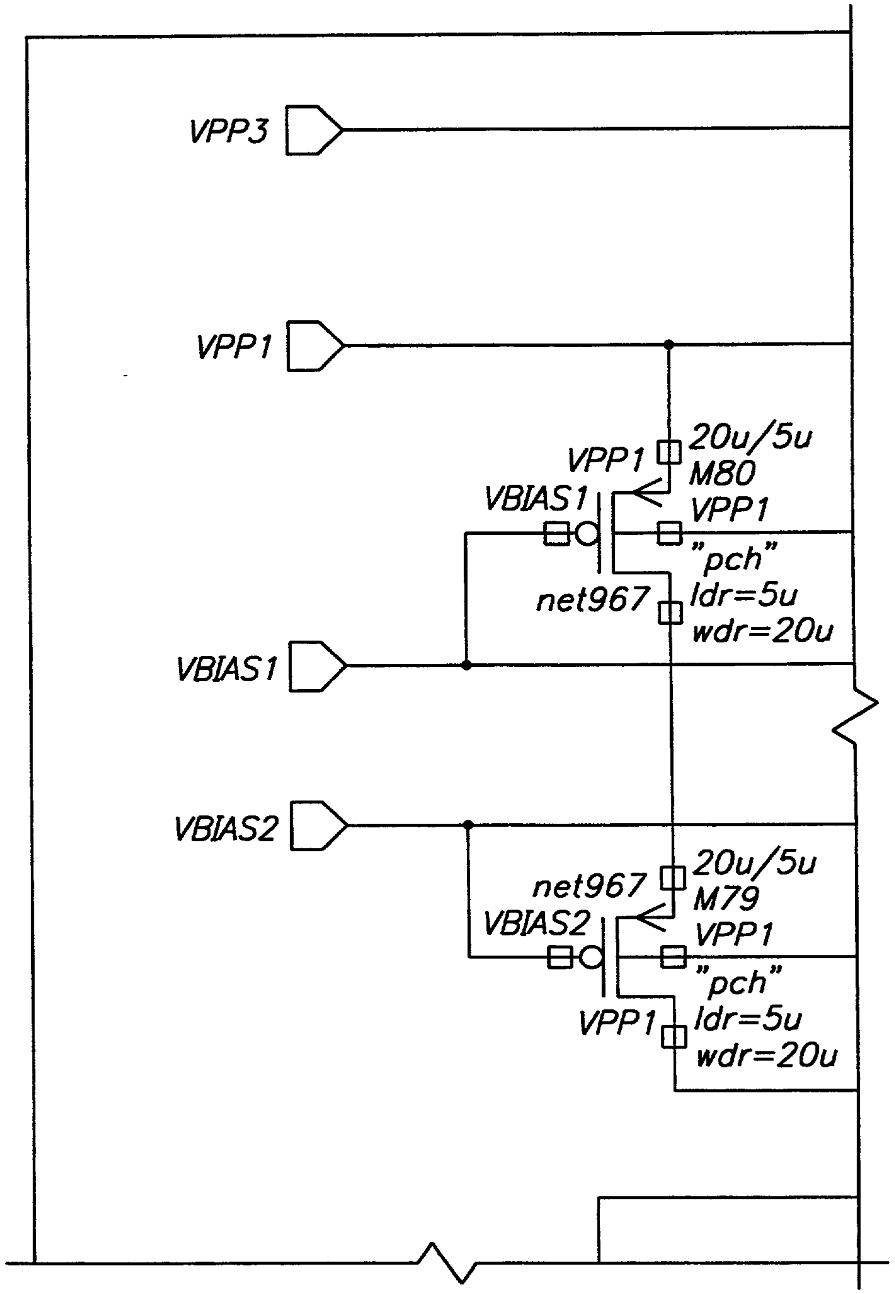

VPP3
VPP1
20u/5u
VPP1
M80
VBIAS1
VPP1
"pch"
net967
ldr=5u
wdr=20u
VBIAS1
VBIAS2
20u/5u
net967
M79
VBIAS2
VPP1
"pch"
VPP1
ldr=5u
wdr=20u

Fig 9.0302AA

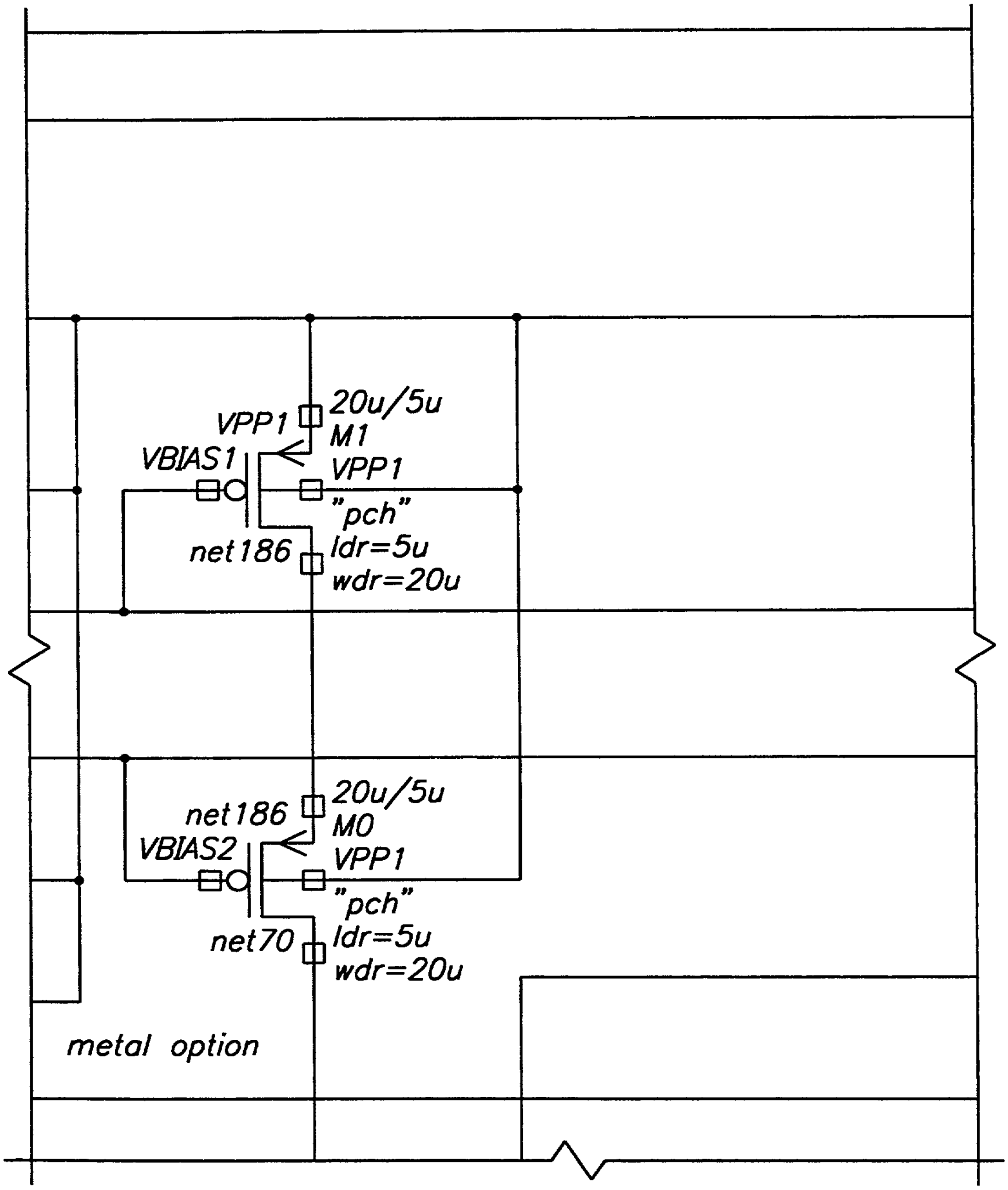

20u/5u
VPP1
M1
VBIAS1
VPP1
"pch"
net186
ldr=5u
wdr=20u
20u/5u
net186
M0
VBIAS2
VPP1
"pch"
net70
ldr=5u
wdr=20u
metal option

FIG 9.0302AB

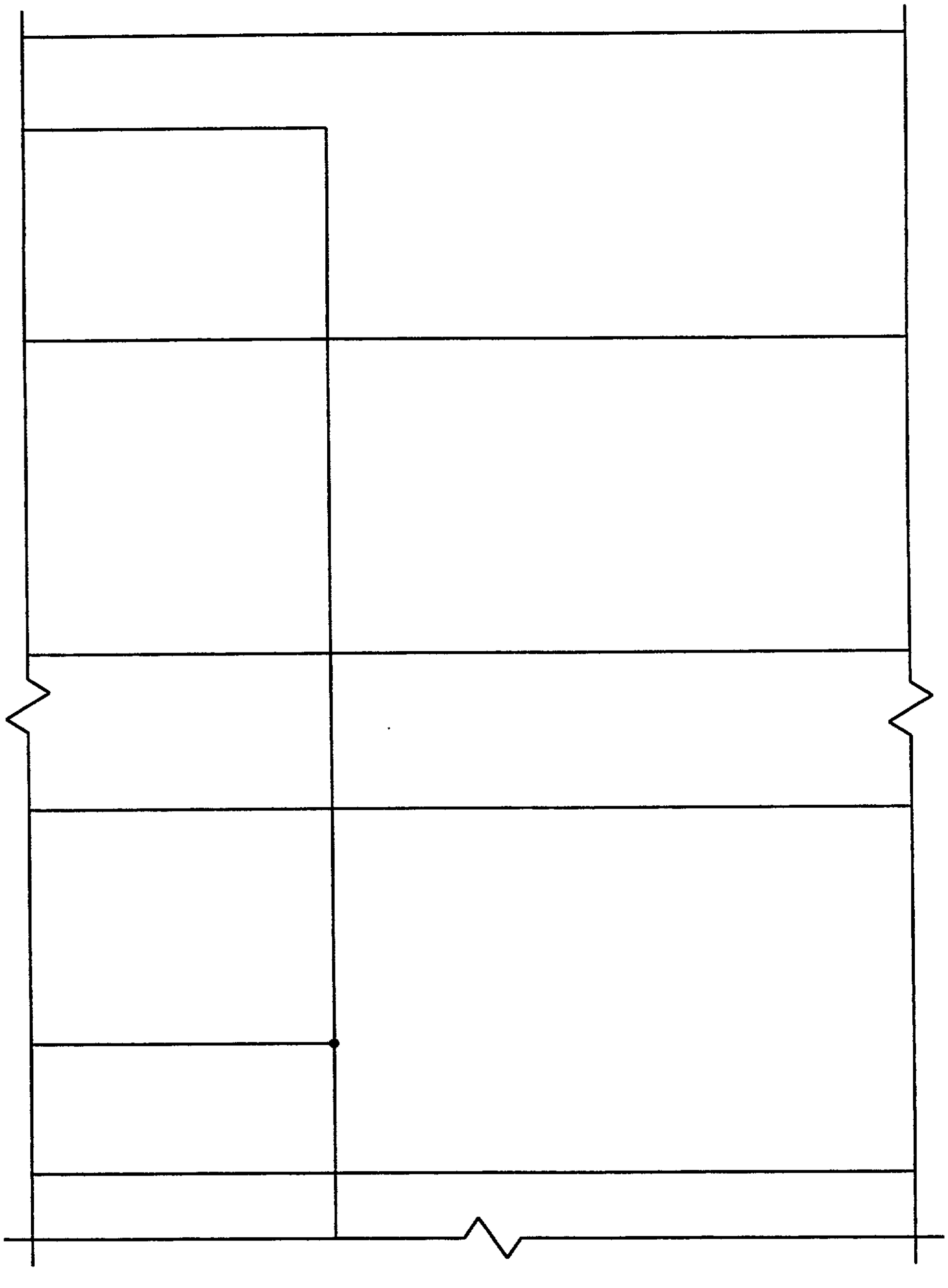


Fig 9.0302AC

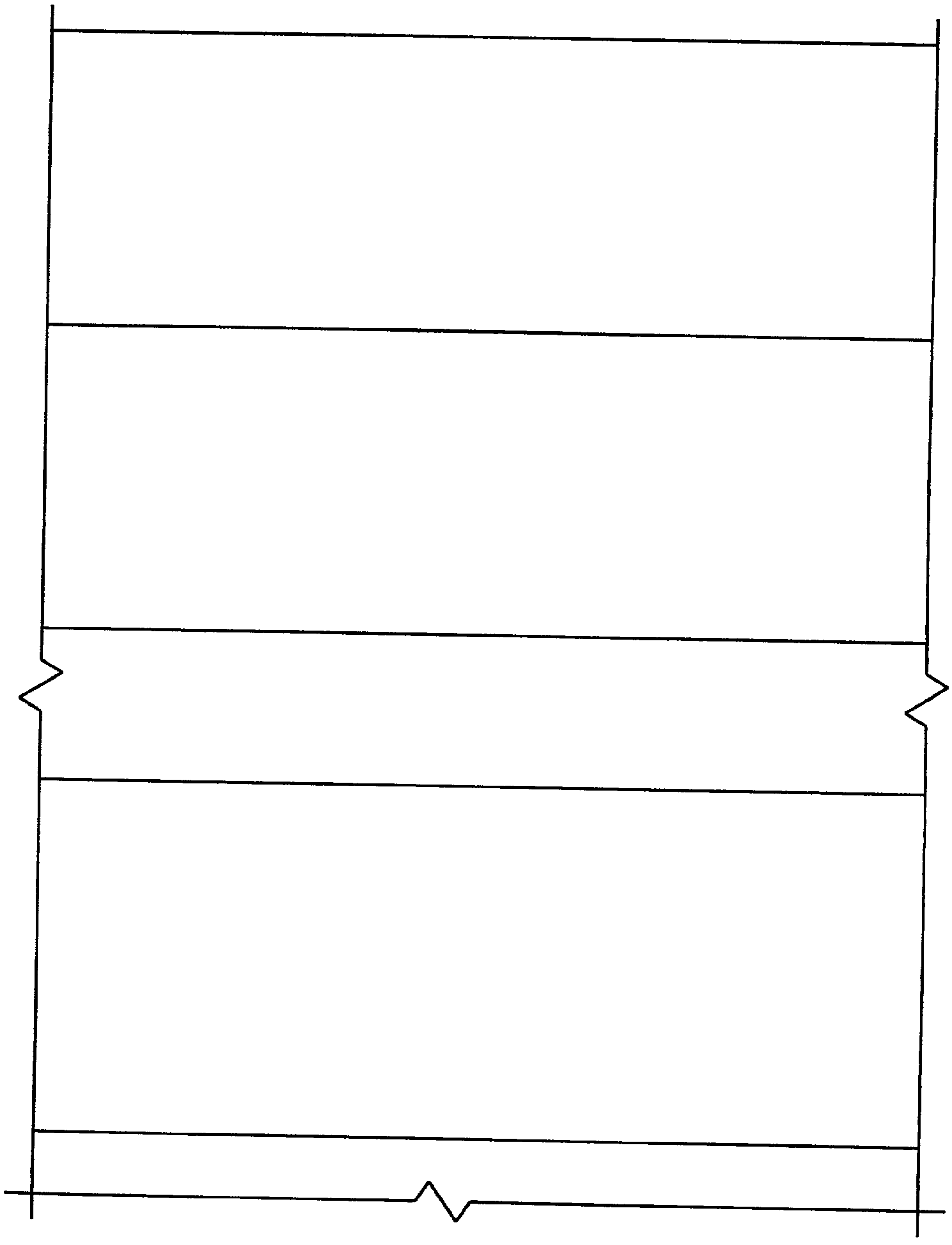


Fig 9.0302AD

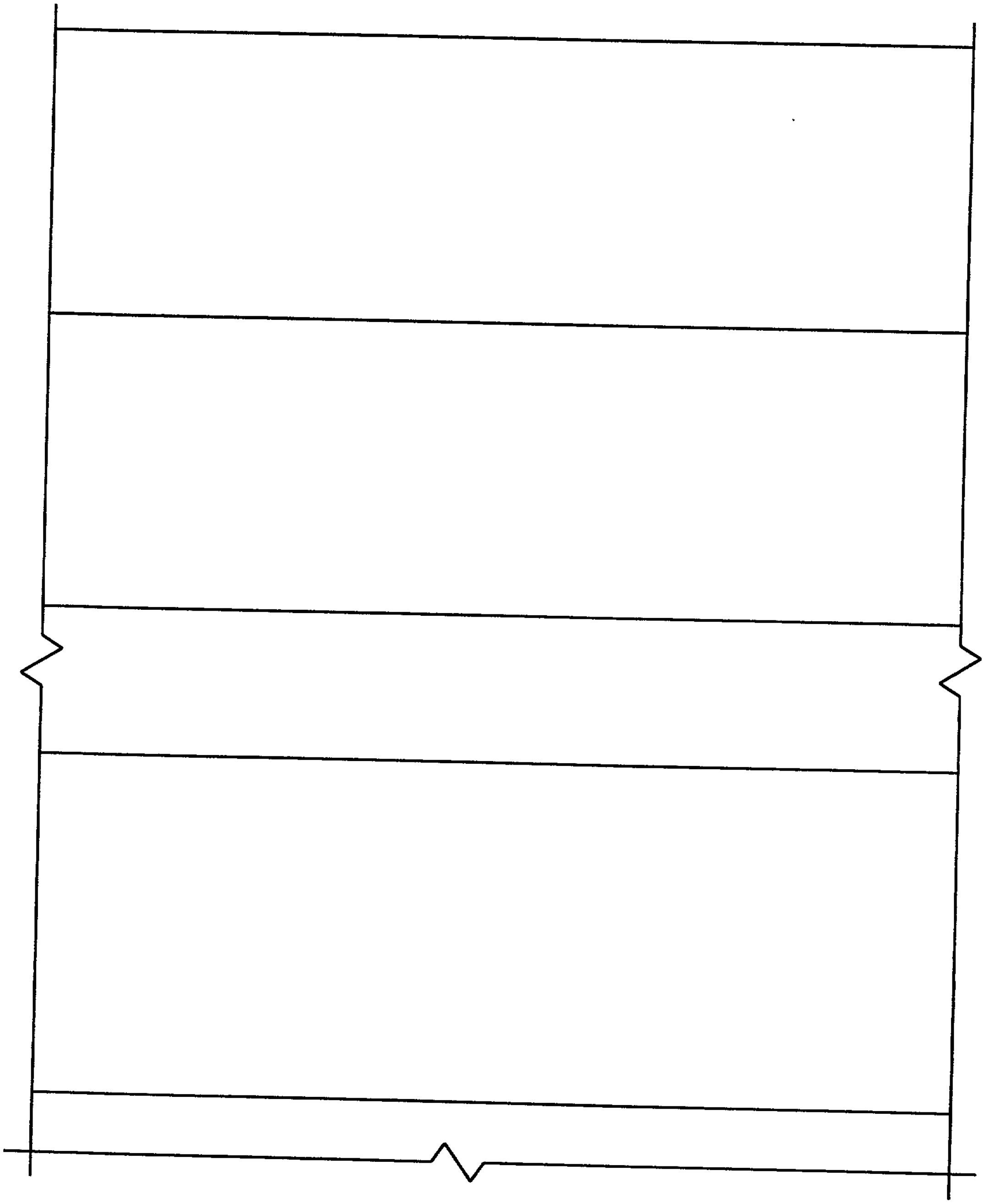


FIG 9.0302AE

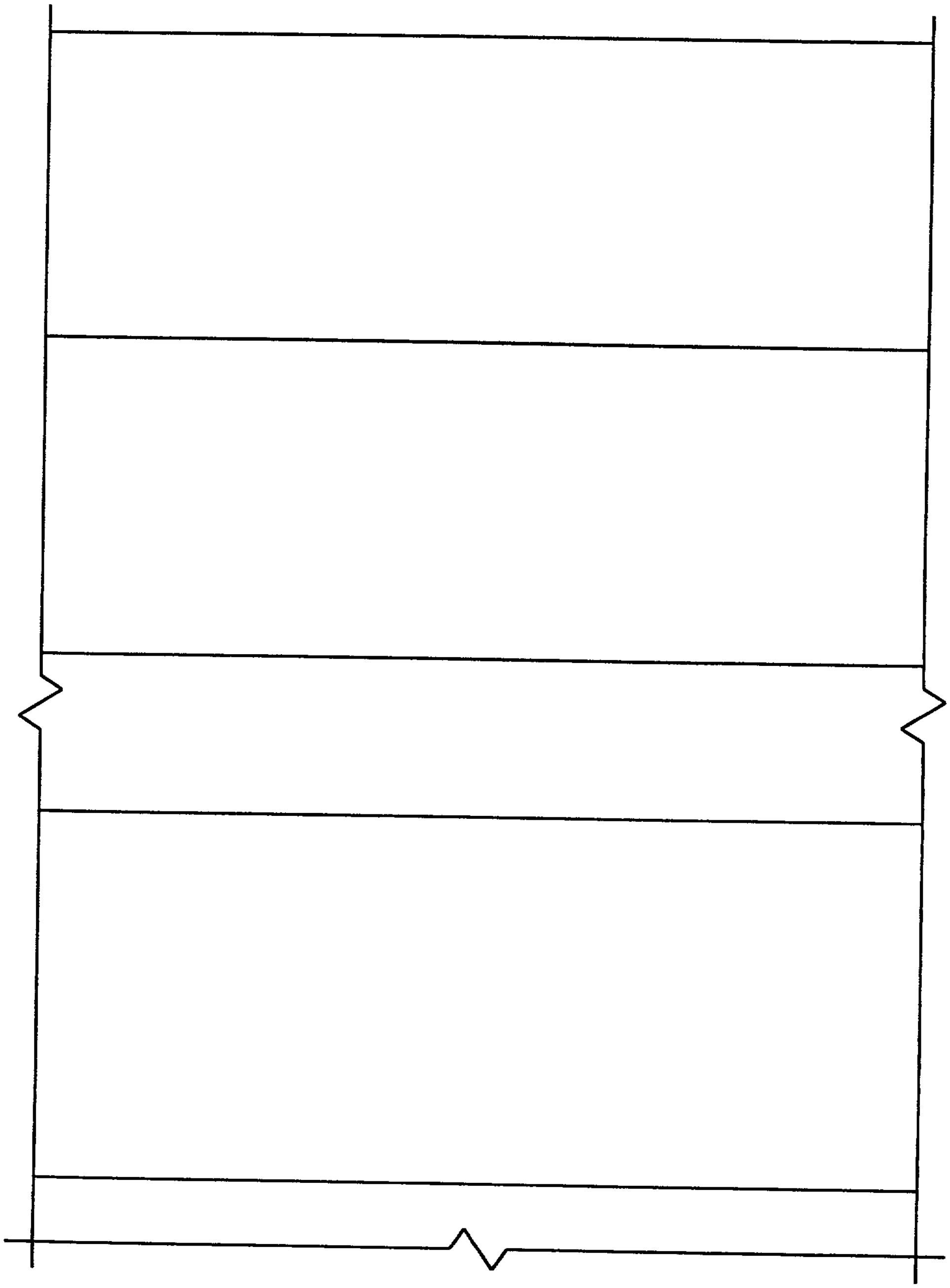


FIG 9.0302AF

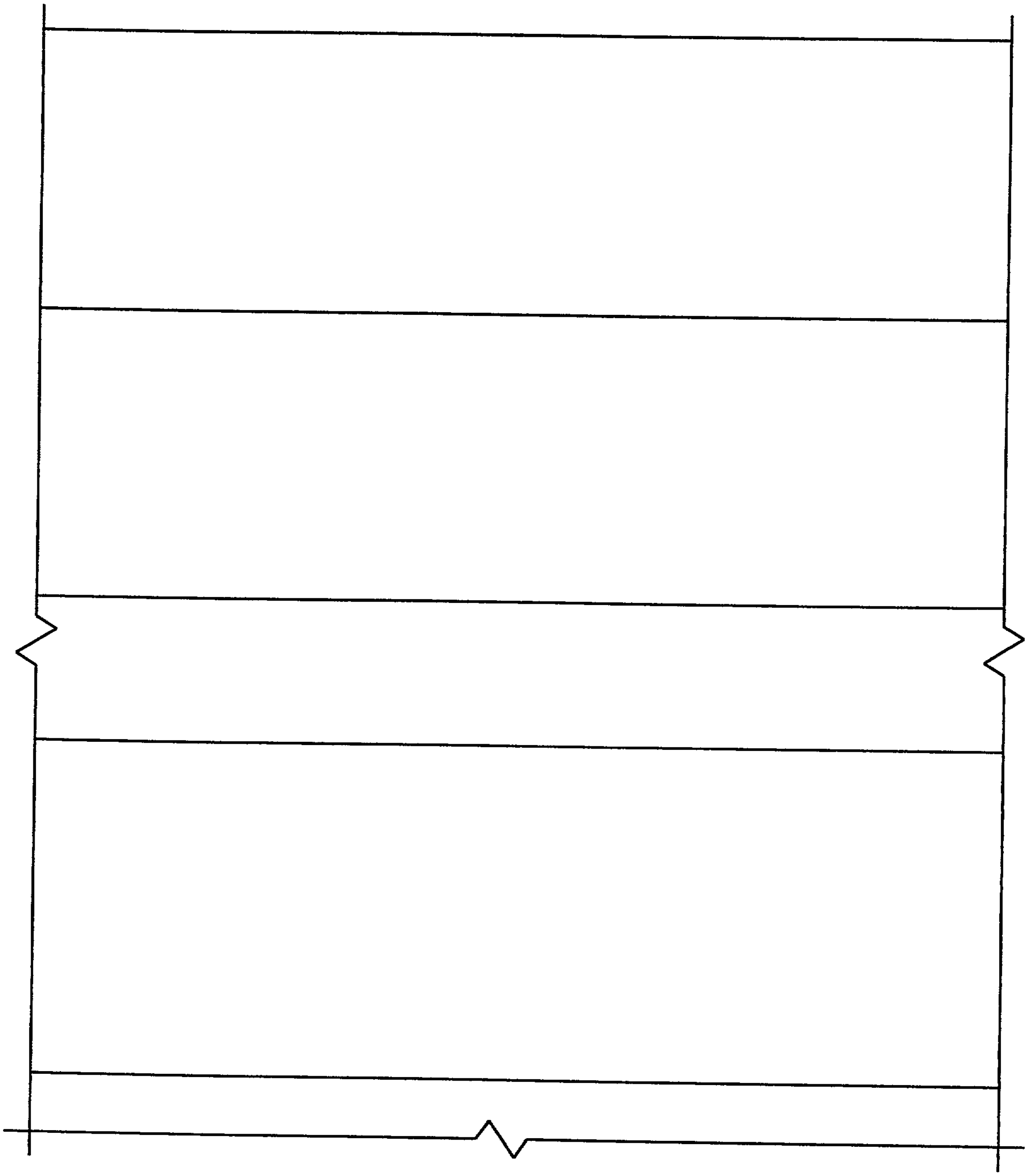


Fig 9.0302AG

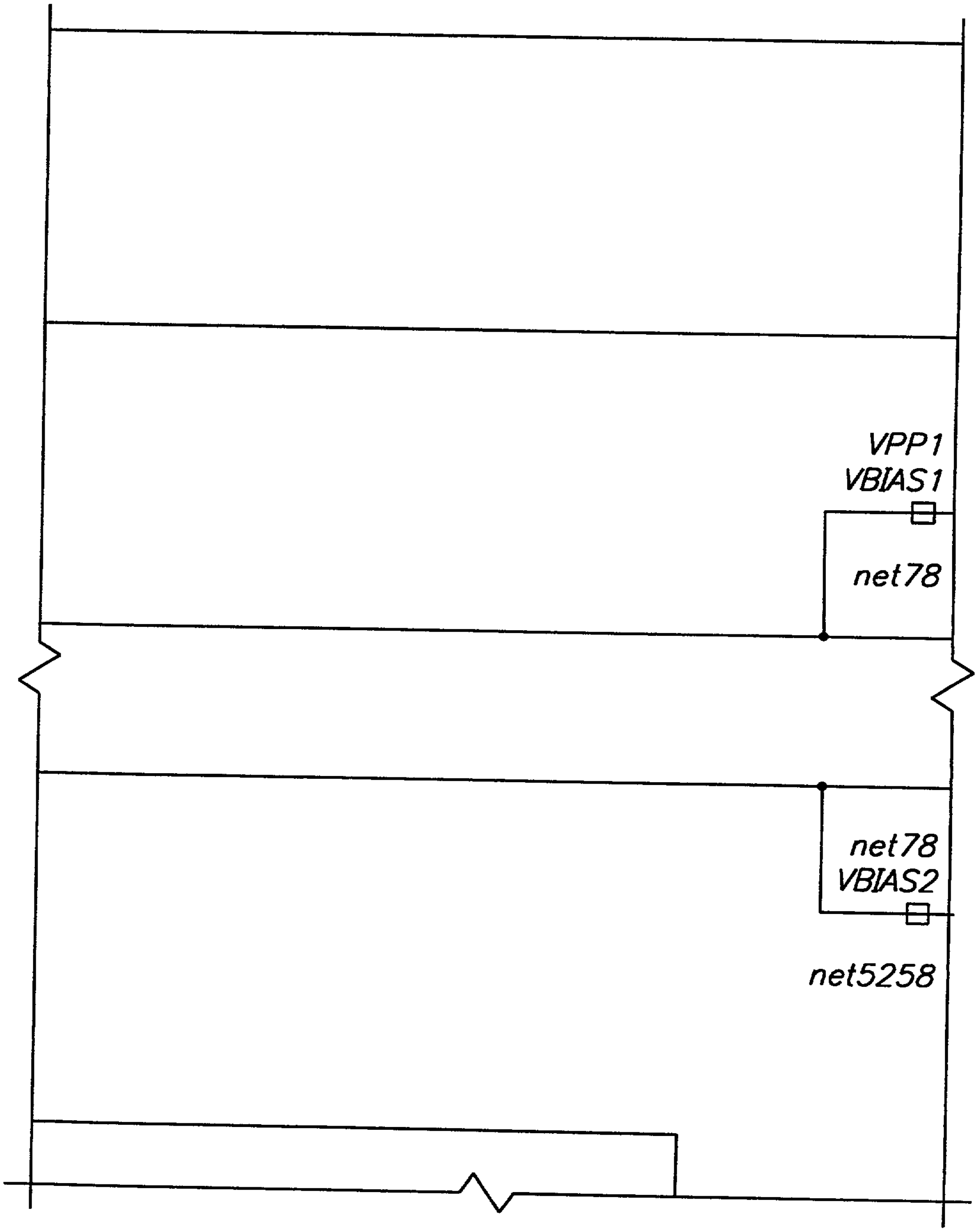


Fig 9.0302AH

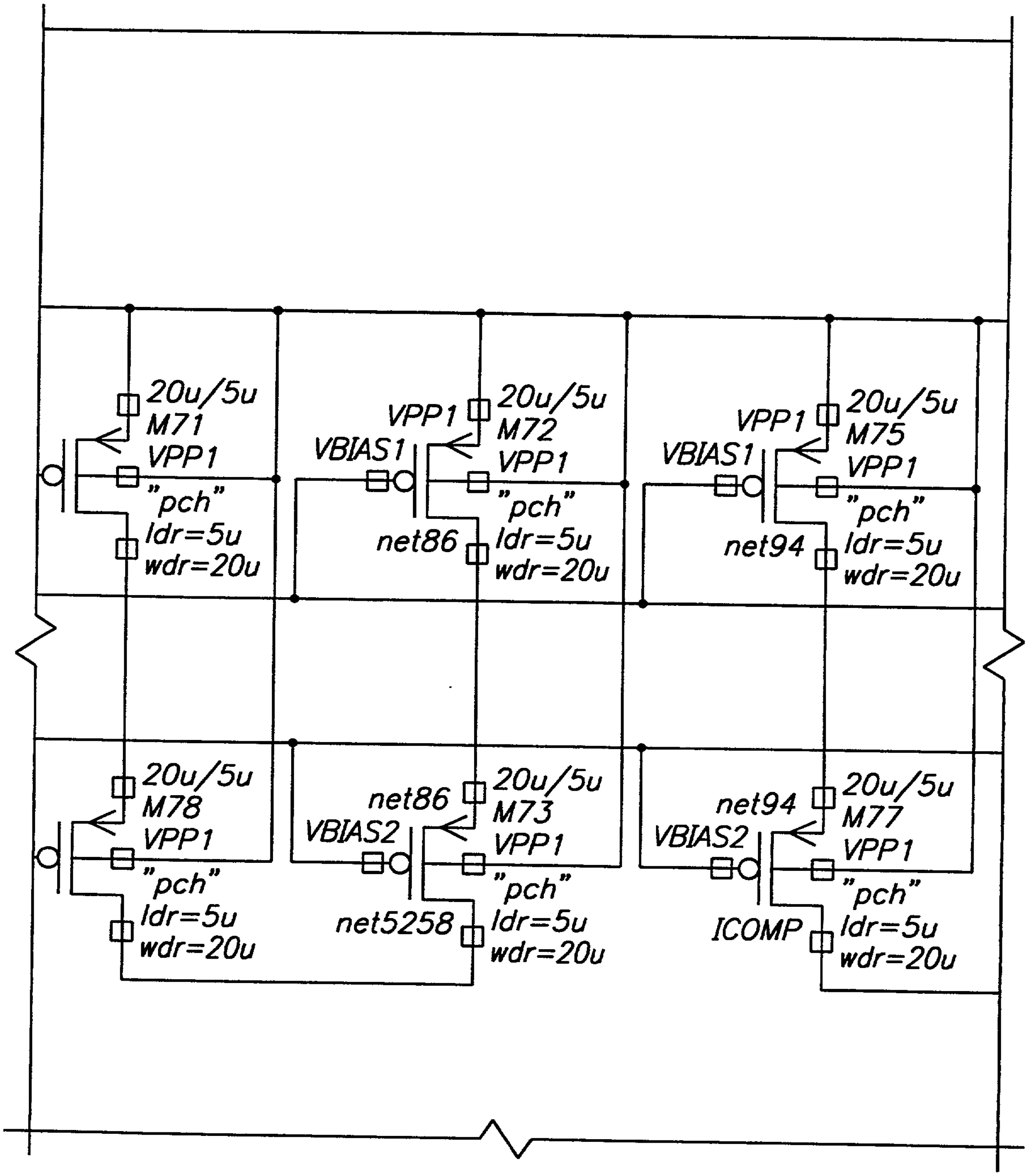

20u/5u
M71
VPP1
"pch"
ldr=5u
wdr=20u
VPP1
20u/5u
M72
VBIAS1
VPP1
"pch"
net86
ldr=5u
wdr=20u
VPP1
20u/5u
M75
VBIAS1
VPP1
"pch"
net94
ldr=5u
wdr=20u
20u/5u
M78
VPP1
"pch"
ldr=5u
wdr=20u
net86
20u/5u
M73
VBIAS2
VPP1
"pch"
net5258
ldr=5u
wdr=20u
net94
20u/5u
M77
VBIAS2
VPP1
"pch"
ICOMP
ldr=5u
wdr=20u

Fig 9.0302AI

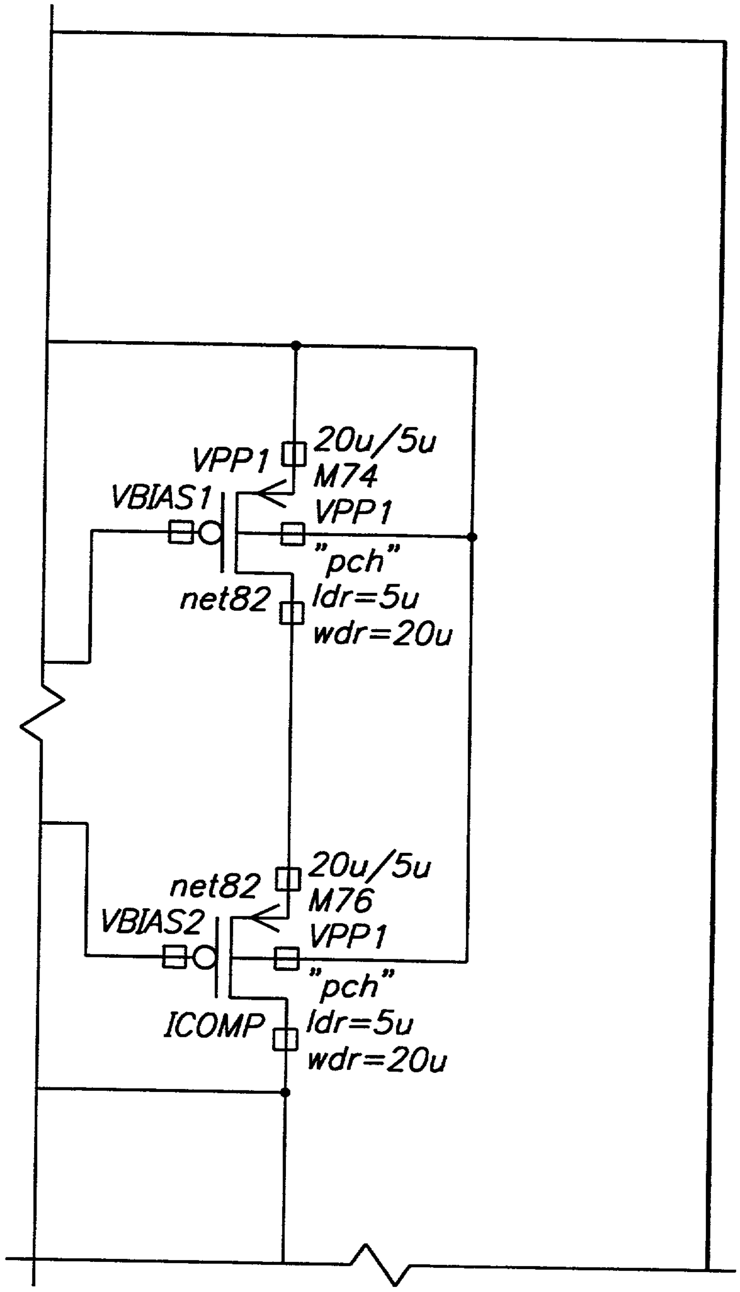

20u/5u
VPP1
M74
VBIAS1
VPP1
"pch"
net82
ldr=5u
wdr=20u
20u/5u
net82
M76
VBIAS2
VPP1
"pch"
ICOMP
ldr=5u
wdr=20u

Fig 9.0302A.1

2508/3273

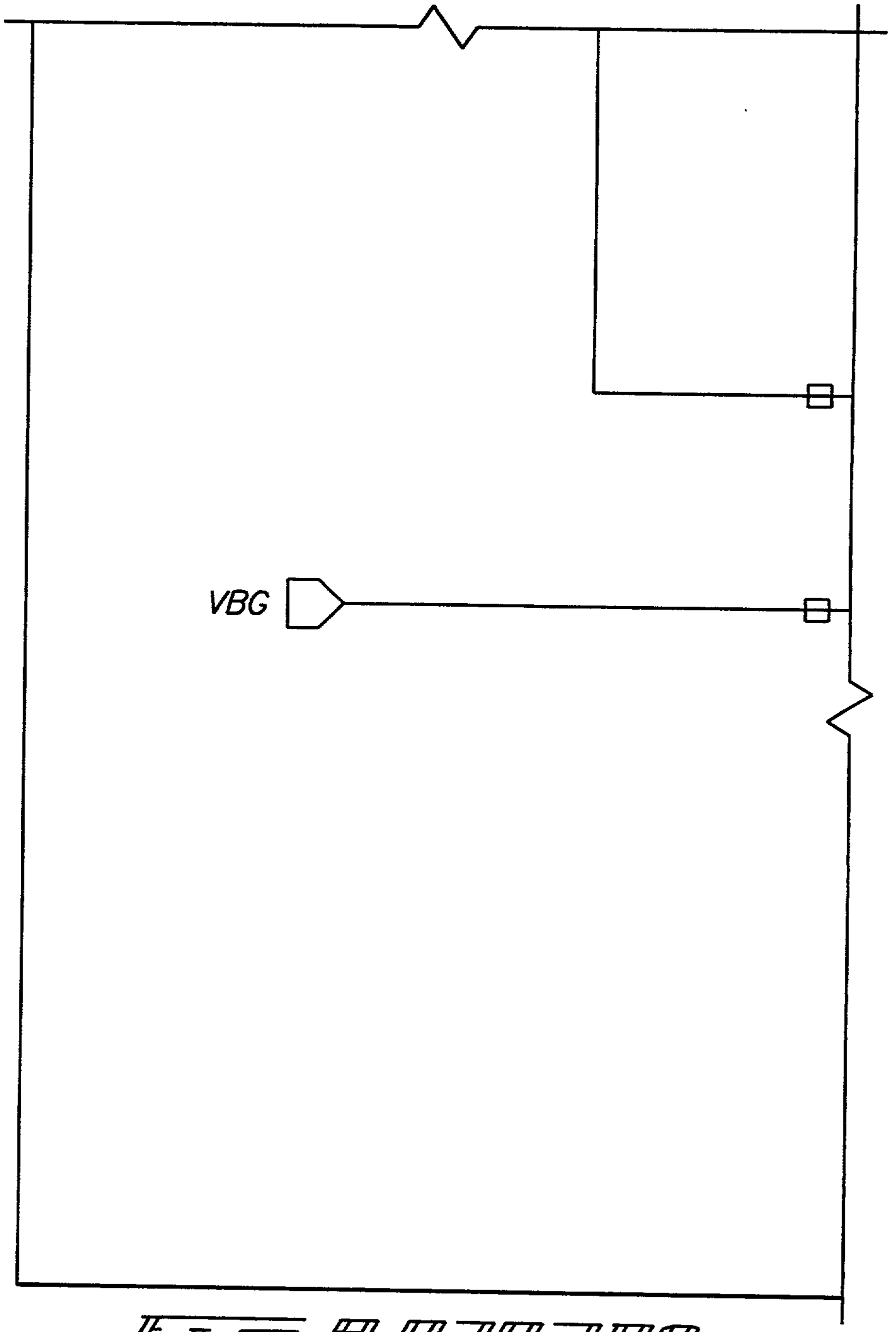


Fig 9.0302BA

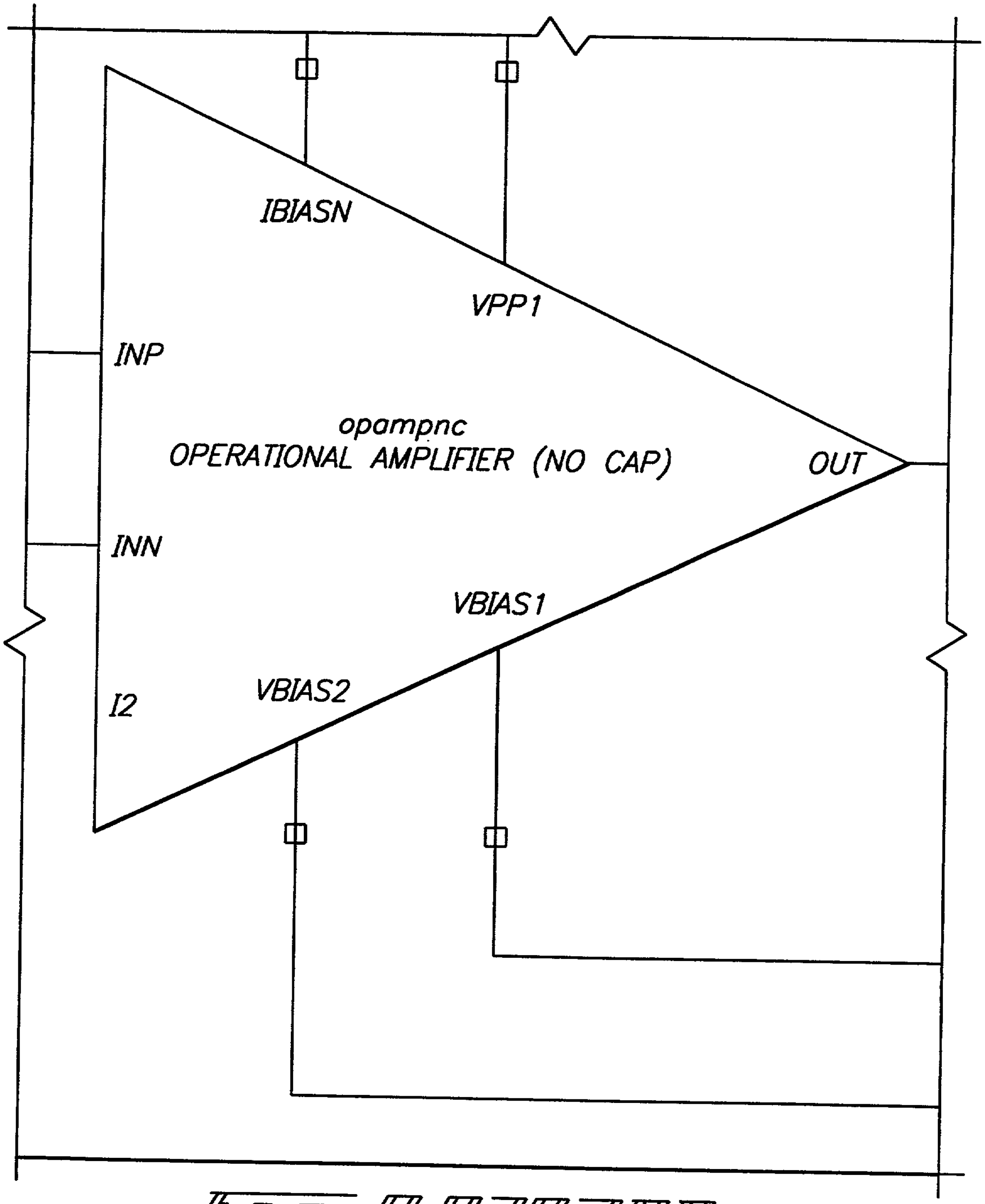

IBIASN
VPP1
INP
opampnc
OPERATIONAL AMPLIFIER (NO CAP)
OUT
INN
VBIAS1
VBIAS2
I2

Fig 9.0302BB

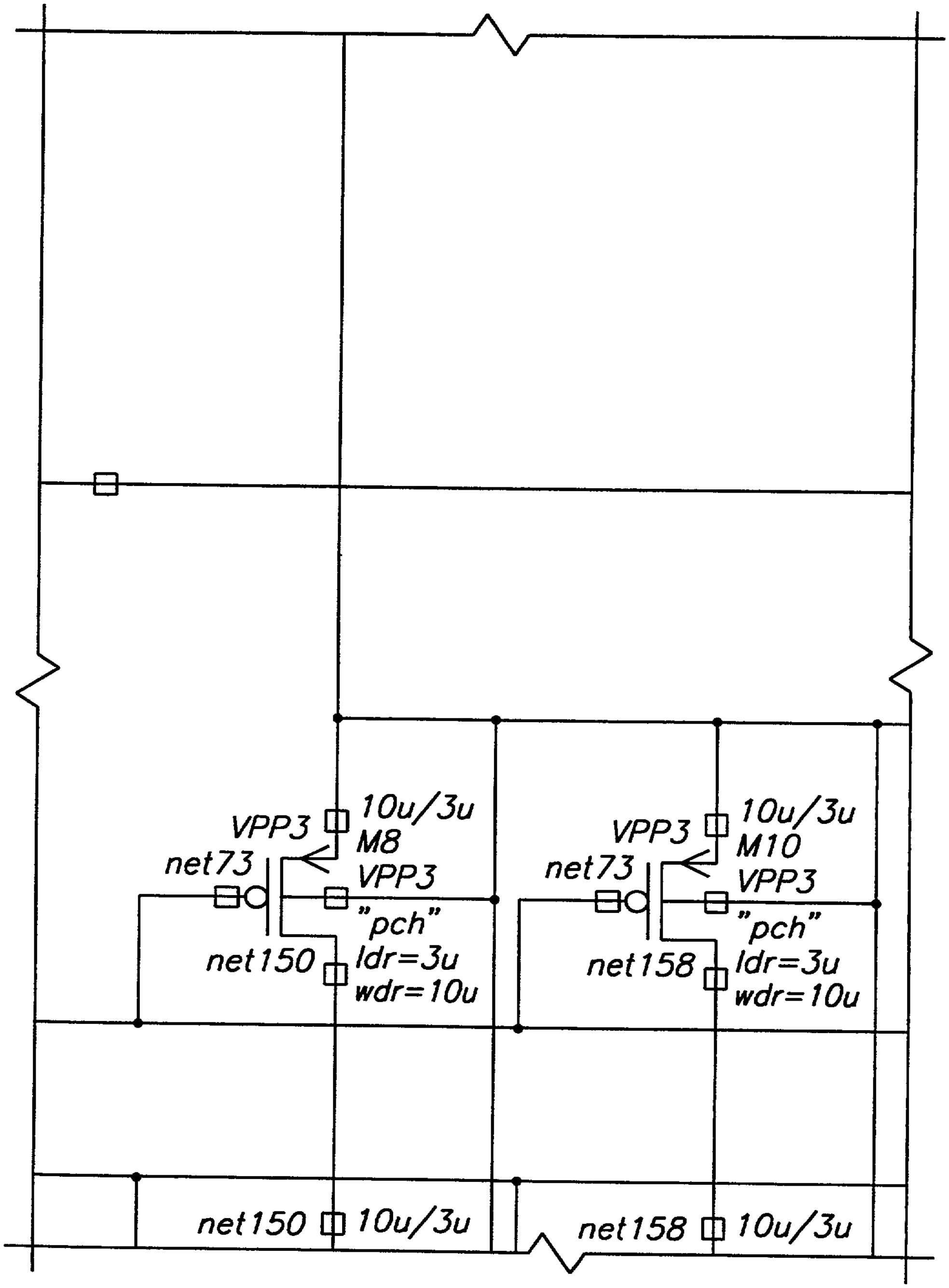

10u/3u
VPP3
M8
net73
VPP3
"pch"
net150
ldr=3u
wdr=10u
10u/3u
VPP3
M10
net73
VPP3
"pch"
net158
ldr=3u
wdr=10u
net150
10u/3u
net158
10u/3u

Fig 9.0302BC

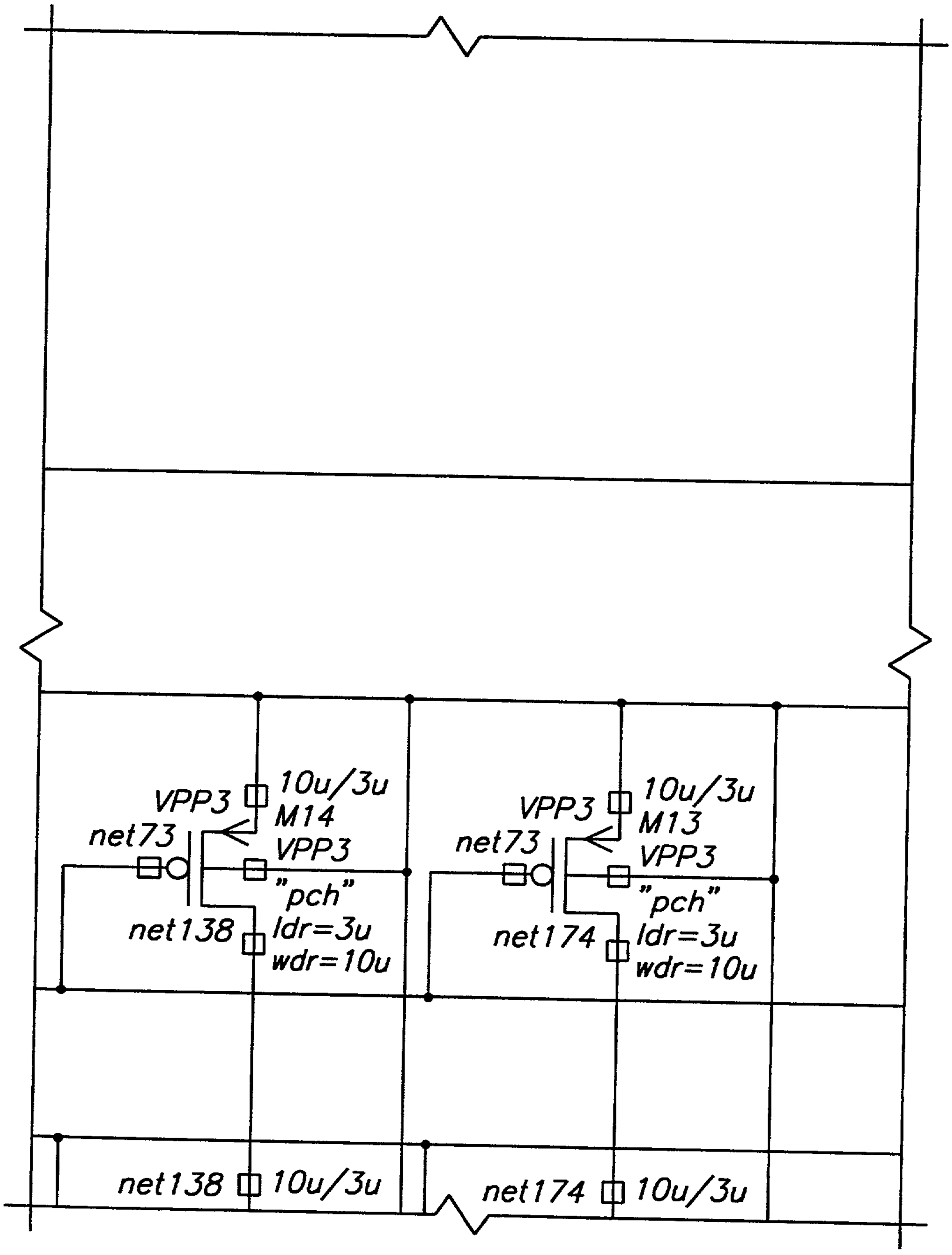

VPP3
10u/3u
M14
net73
VPP3
"pch"
net138
ldr=3u
wdr=10u
VPP3
10u/3u
M13
net73
VPP3
"pch"
net174
ldr=3u
wdr=10u
net138
10u/3u
net174
10u/3u

Fig 9.0302BD

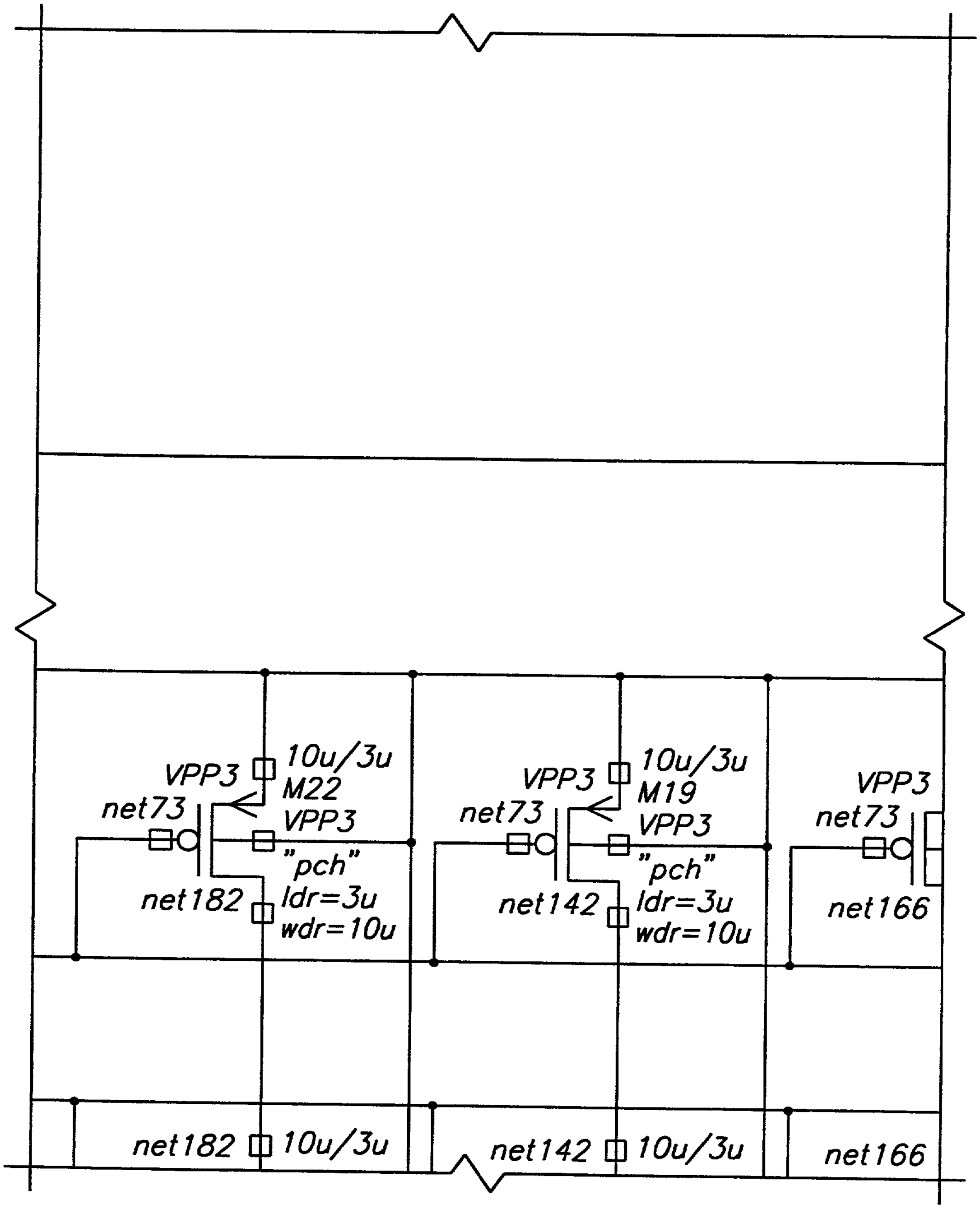

VPP3
net73
10u/3u
M22
VPP3
"pch"
ldr=3u
wdr=10u
net182
VPP3
net73
10u/3u
M19
VPP3
"pch"
ldr=3u
wdr=10u
net142
VPP3
net73
net166
net182
10u/3u
net142
10u/3u
net166

Fig 9.0302BE

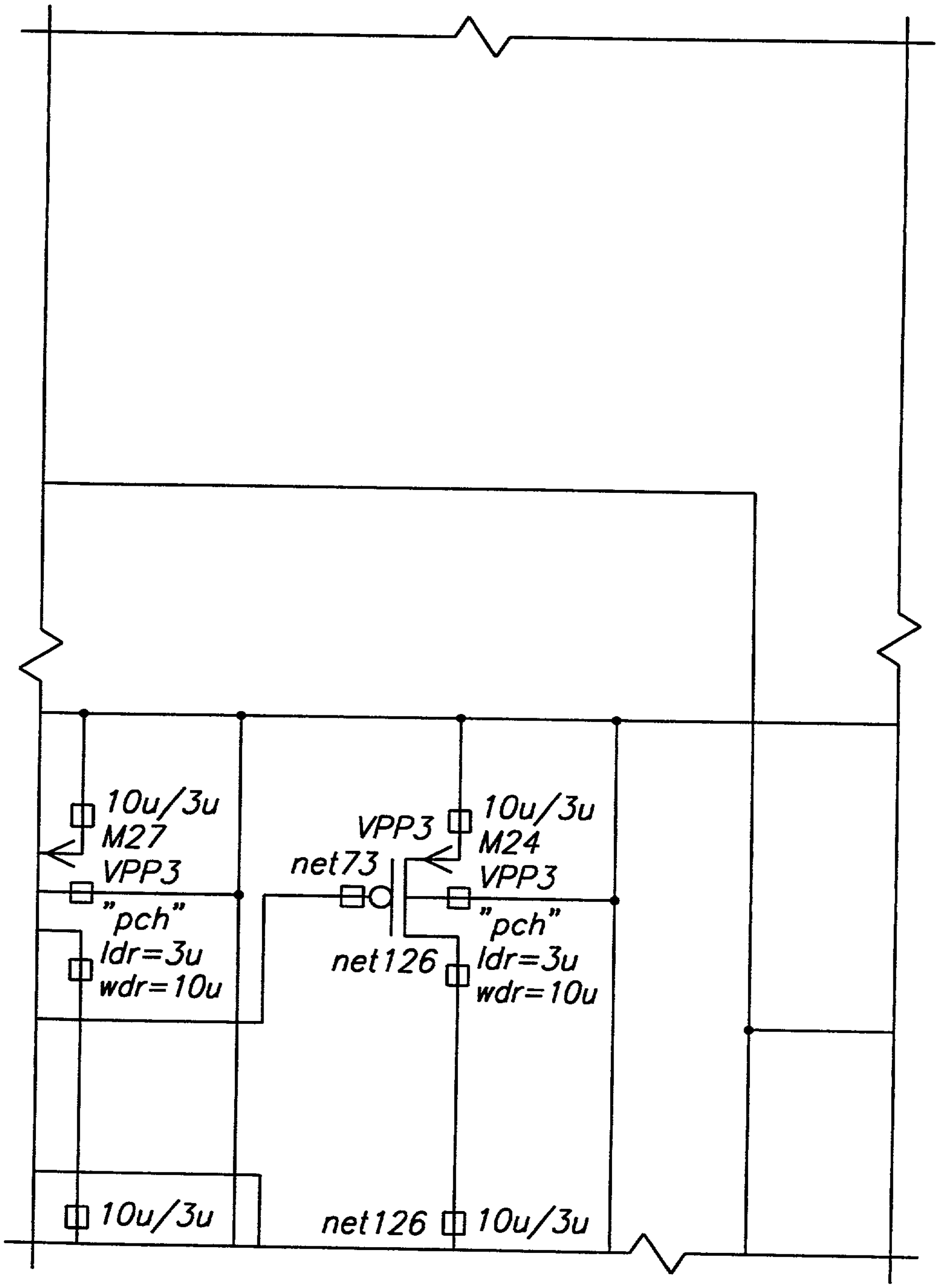

10u/3u
M27
VPP3
"pch"
ldr=3u
wdr=10u
10u/3u
VPP3
net73
10u/3u
M24
VPP3
"pch"
net126
ldr=3u
wdr=10u
net126
10u/3u

Fig 9.0302BF

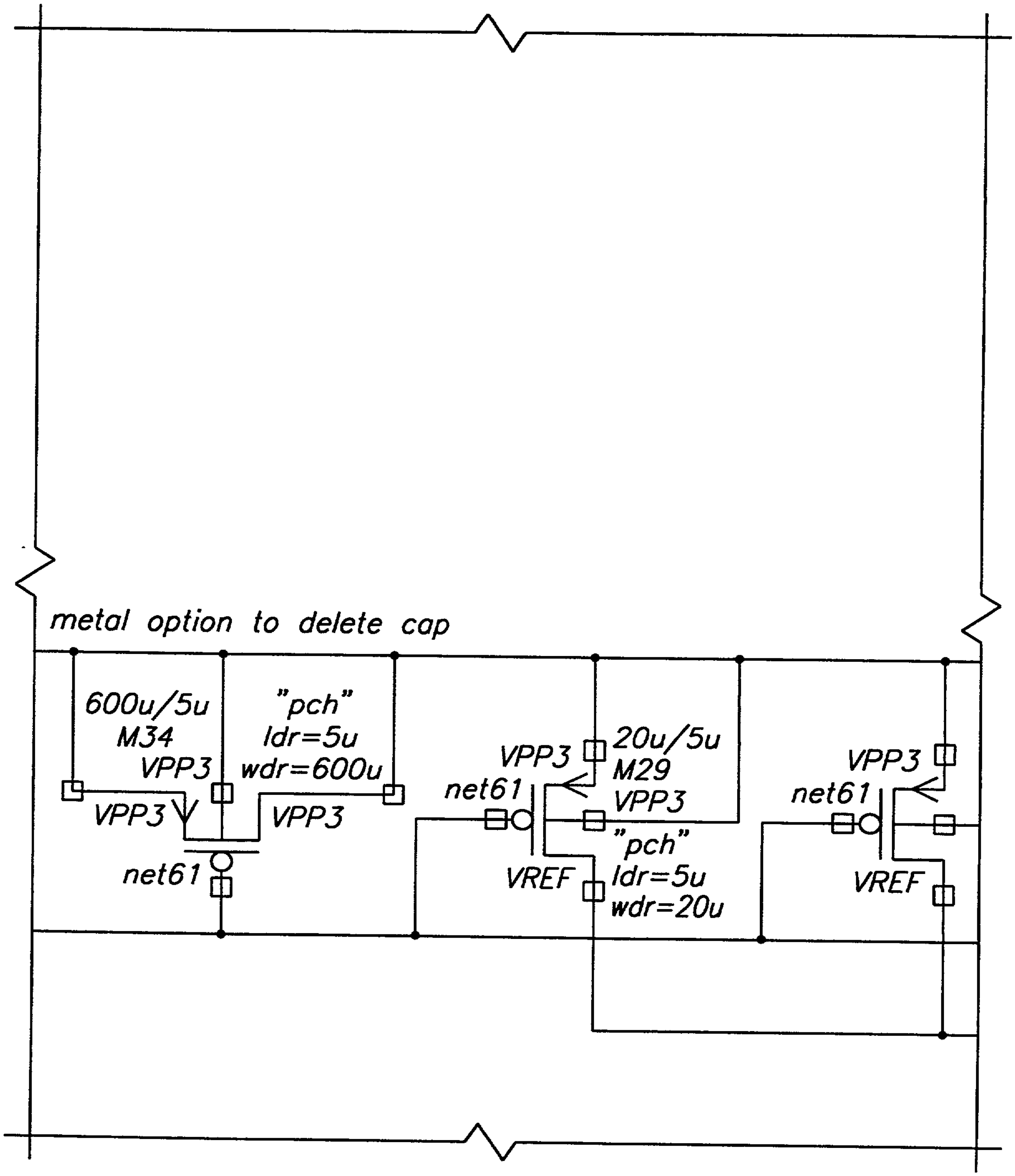

metal option to delete cap
600u/5u
M34
VPP3
VPP3
"pch"
ldr=5u
wdr=600u
VPP3
net61
VPP3
20u/5u
M29
VPP3
net61
"pch"
ldr=5u
wdr=20u
VREF
VPP3
net61
VREF

Fig 9.0302BG

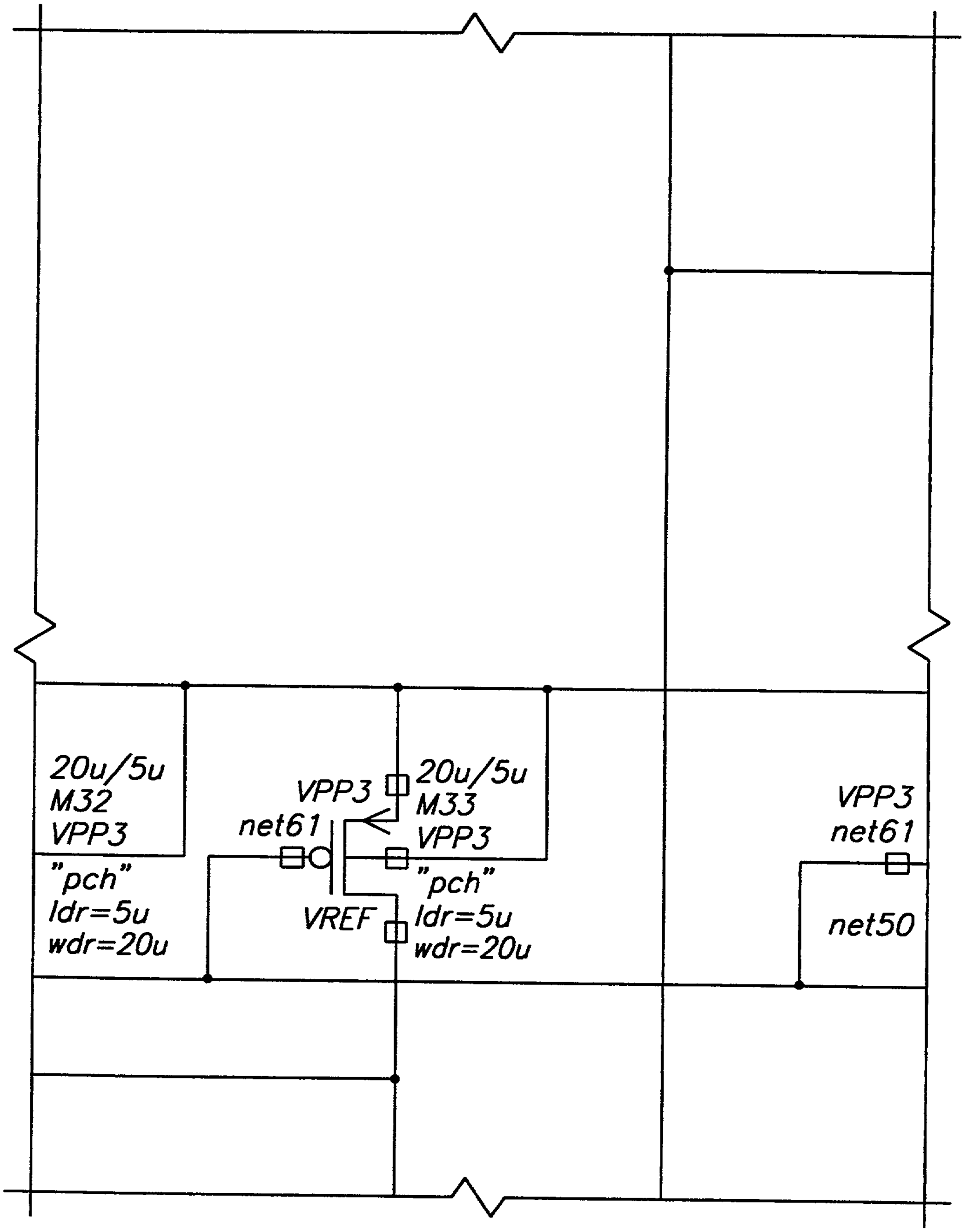

20u/5u
M32
VPP3
"pch"
ldr=5u
wdr=20u
VPP3
net61
VREF
20u/5u
M33
VPP3
"pch"
ldr=5u
wdr=20u
VPP3
net61
net50

Fig 9.0302BH

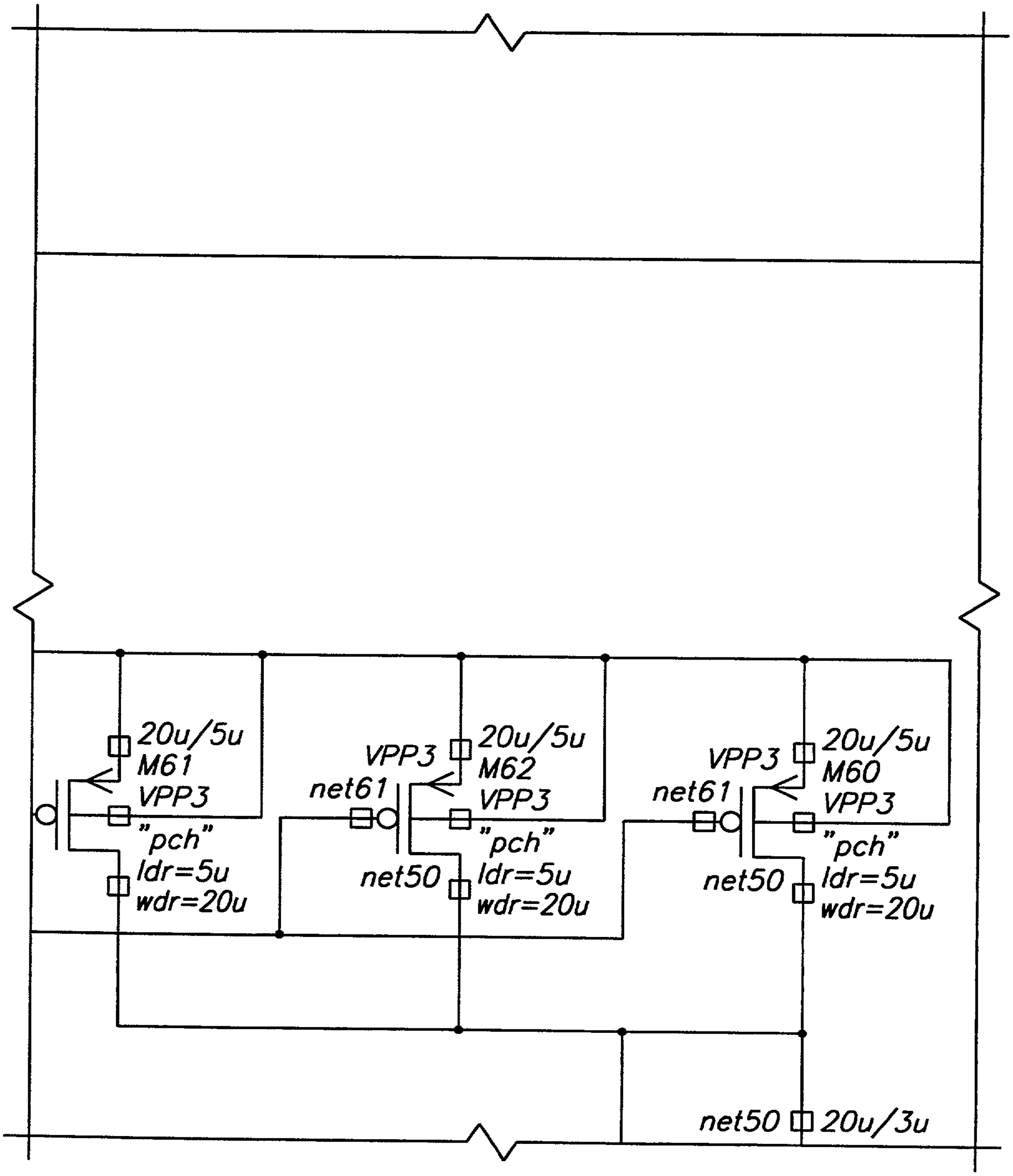

20u/5u
M61
VPP3
"pch"
ldr=5u
wdr=20u
VPP3
net61
20u/5u
M62
VPP3
"pch"
net50
ldr=5u
wdr=20u
VPP3
net61
20u/5u
M60
VPP3
"pch"
net50
ldr=5u
wdr=20u
net50
20u/3u

Fig 9.0302BI

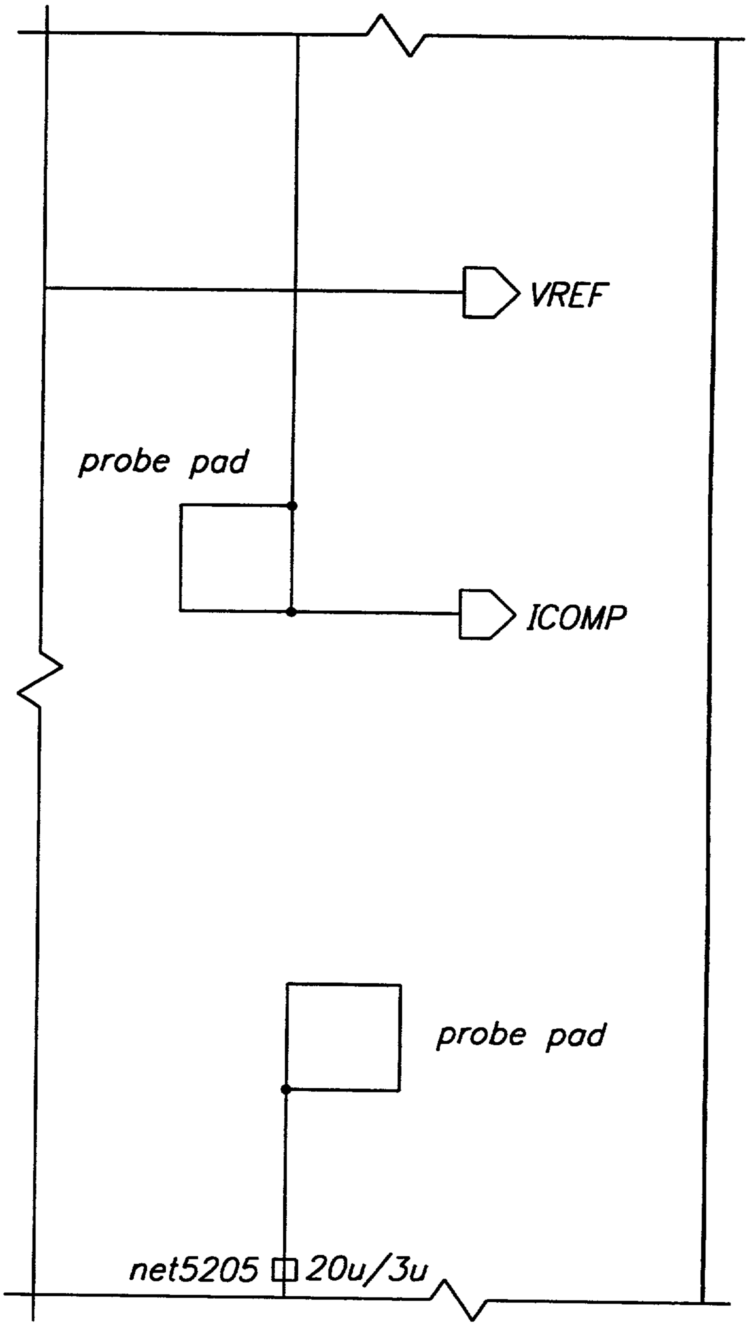


Fig 9.0302B.1

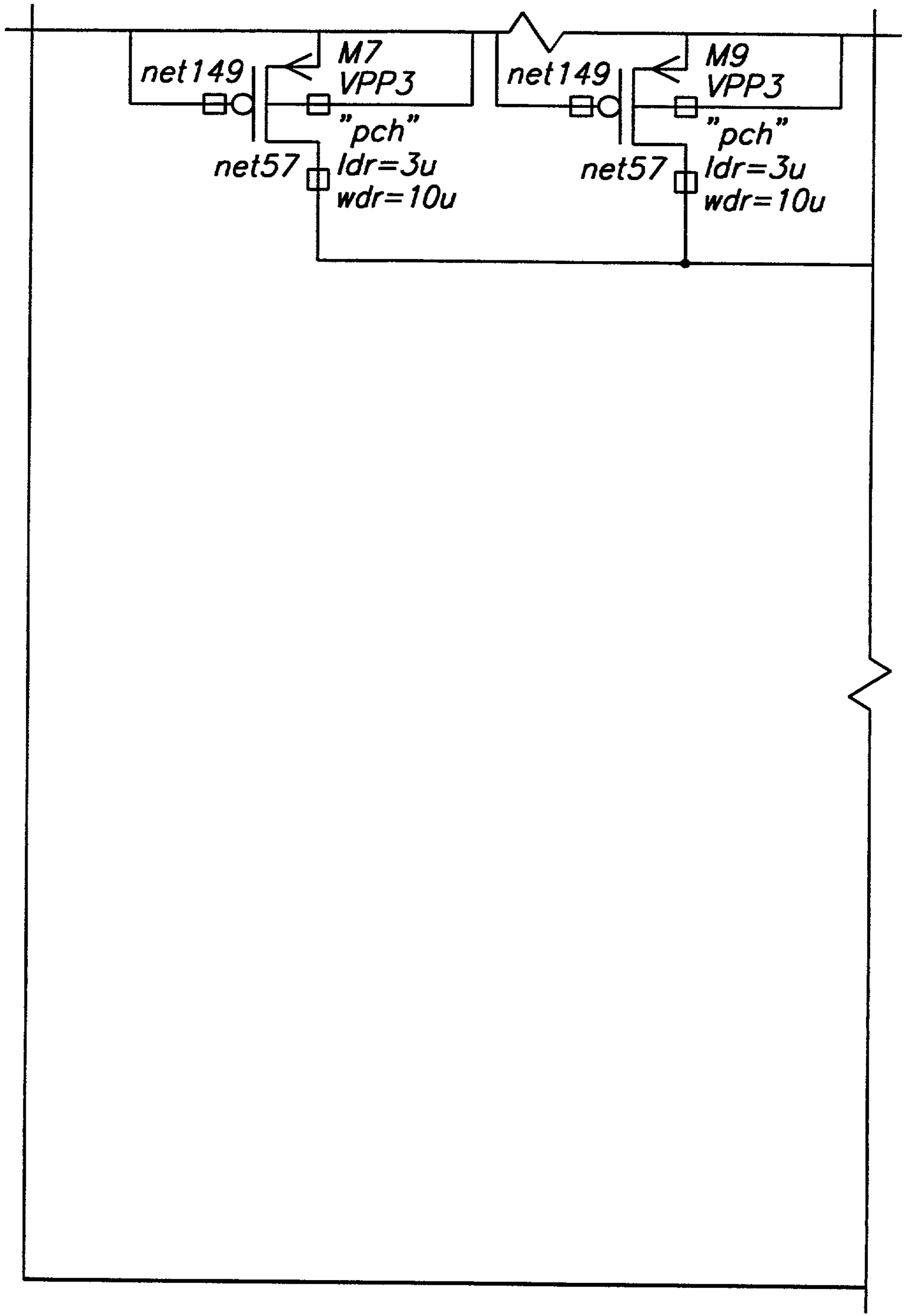

net149
M7
VPP3
"pch"
net57
ldr=3u
wdr=10u
net149
M9
VPP3
"pch"
net57
ldr=3u
wdr=10u

Fig 9.0302CC

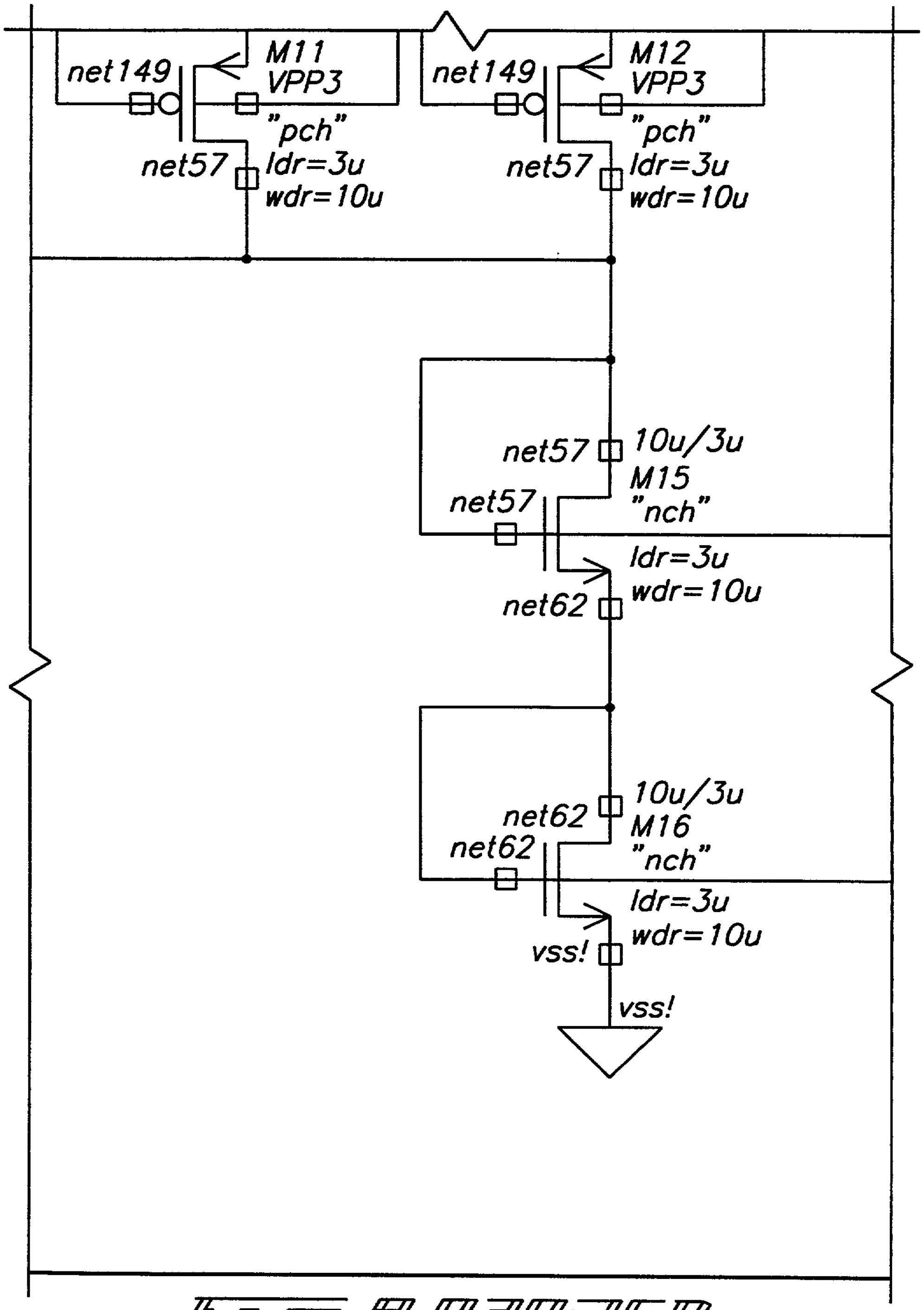
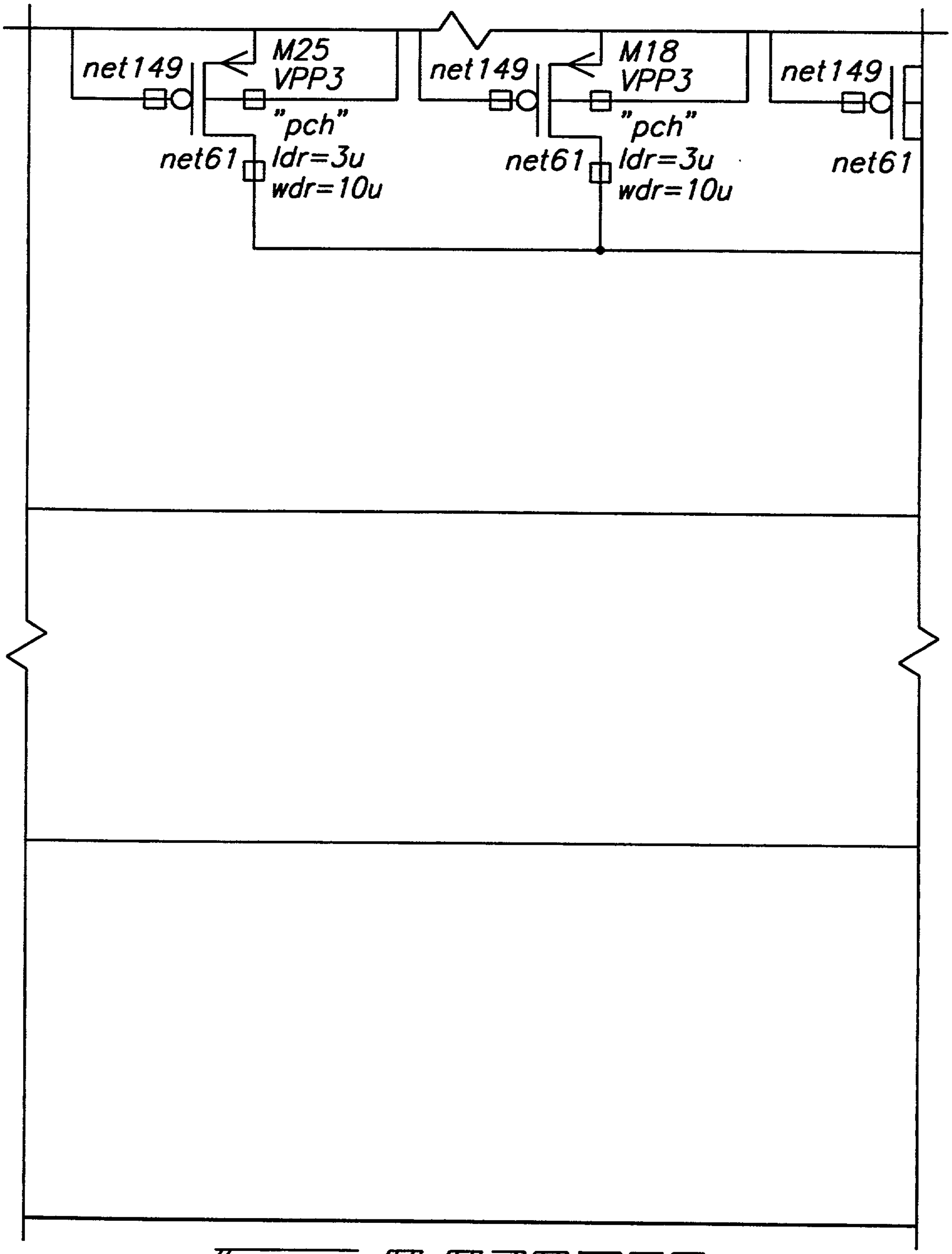

M11
VPP3
"pch"
ldr=3u
wdr=10u
net149
net57
M12
VPP3
"pch"
ldr=3u
wdr=10u
net149
net57
net57
10u/3u
M15
"nch"
net57
ldr=3u
wdr=10u
net62
10u/3u
net62
M16
"nch"
net62
ldr=3u
wdr=10u
vss!
vss!

Fig 9.0302CD



net149
M25
VPP3
"pch"
net61
ldr=3u
wdr=10u
net149
M18
VPP3
"pch"
net61
ldr=3u
wdr=10u
net149
net61

Fig 9.0302CE

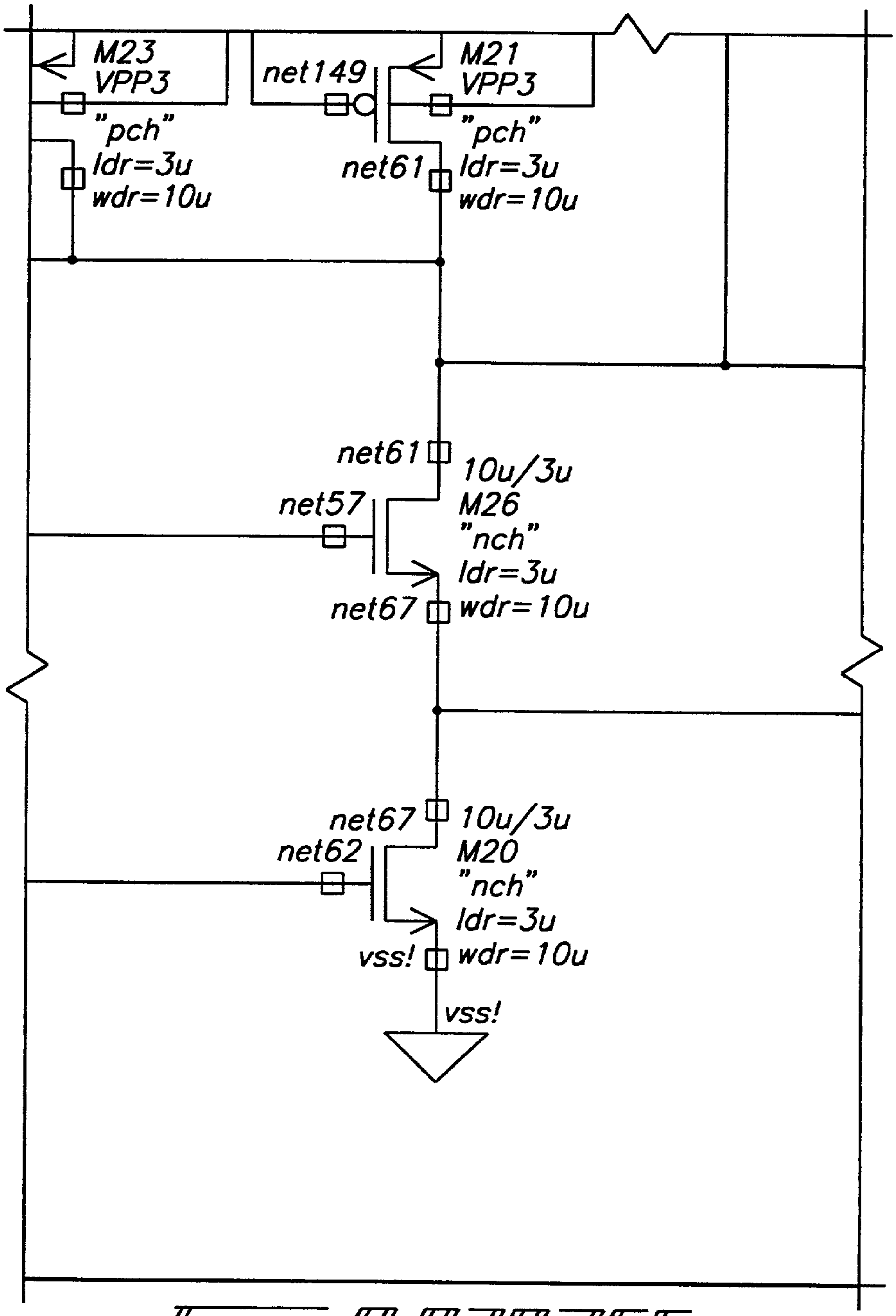

M23
VPP3
"pch"
ldr=3u
wdr=10u
net149
M21
VPP3
"pch"
net61
ldr=3u
wdr=10u
net61
10u/3u
M26
net57
"nch"
ldr=3u
net67
wdr=10u
net67
10u/3u
net62
M20
"nch"
ldr=3u
vss!
wdr=10u
vss!

Fig 9.0302CF

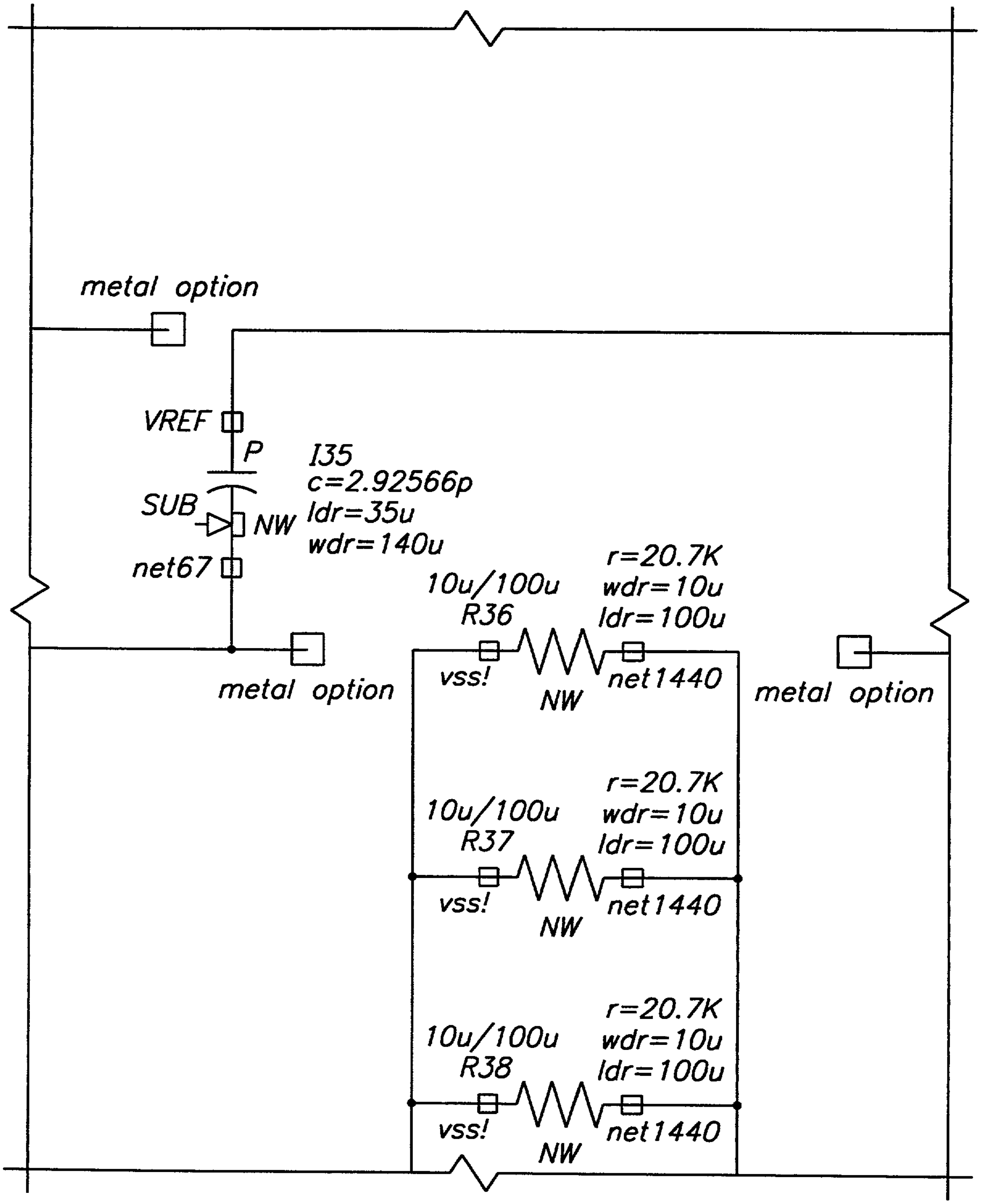

metal option
VREF
P
I35
c=2.92566p
ldr=35u
wdr=140u
SUB
NW
net67
metal option
10u/100u
R36
r=20.7K
wdr=10u
ldr=100u
vss!
NW
net1440
metal option
10u/100u
R37
r=20.7K
wdr=10u
ldr=100u
vss!
NW
net1440
10u/100u
R38
r=20.7K
wdr=10u
ldr=100u
vss!
NW
net1440

Fig 9.0302CG

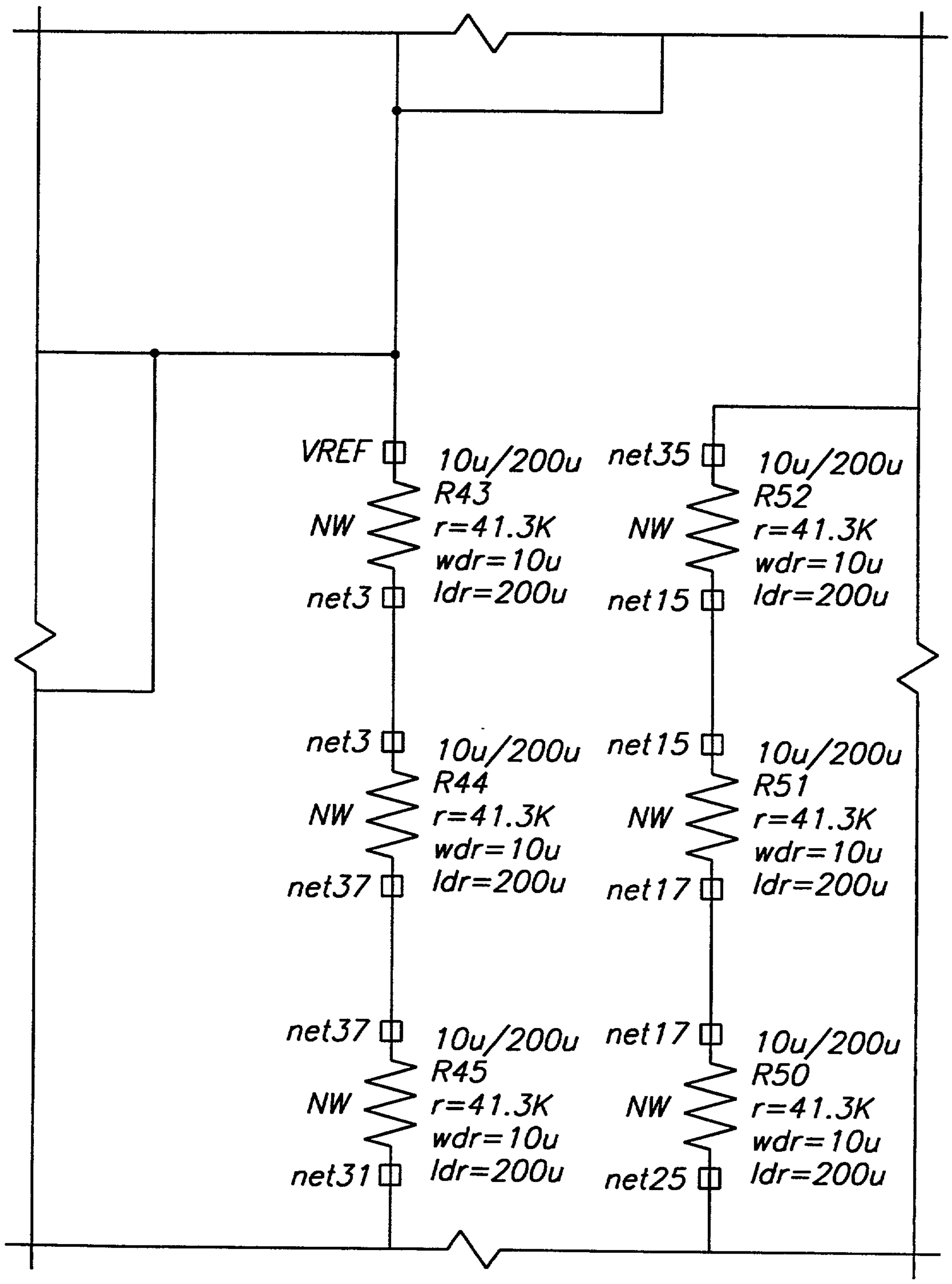

VREF
10u/200u
R43
NW
r=41.3K
wdr=10u
net3
ldr=200u
net35
10u/200u
R52
NW
r=41.3K
wdr=10u
net15
ldr=200u
net3
10u/200u
R44
NW
r=41.3K
wdr=10u
net37
ldr=200u
net15
10u/200u
R51
NW
r=41.3K
wdr=10u
net17
ldr=200u
net37
10u/200u
R45
NW
r=41.3K
wdr=10u
net31
ldr=200u
net17
10u/200u
R50
NW
r=41.3K
wdr=10u
net25
ldr=200u

Fig 9.0302CH

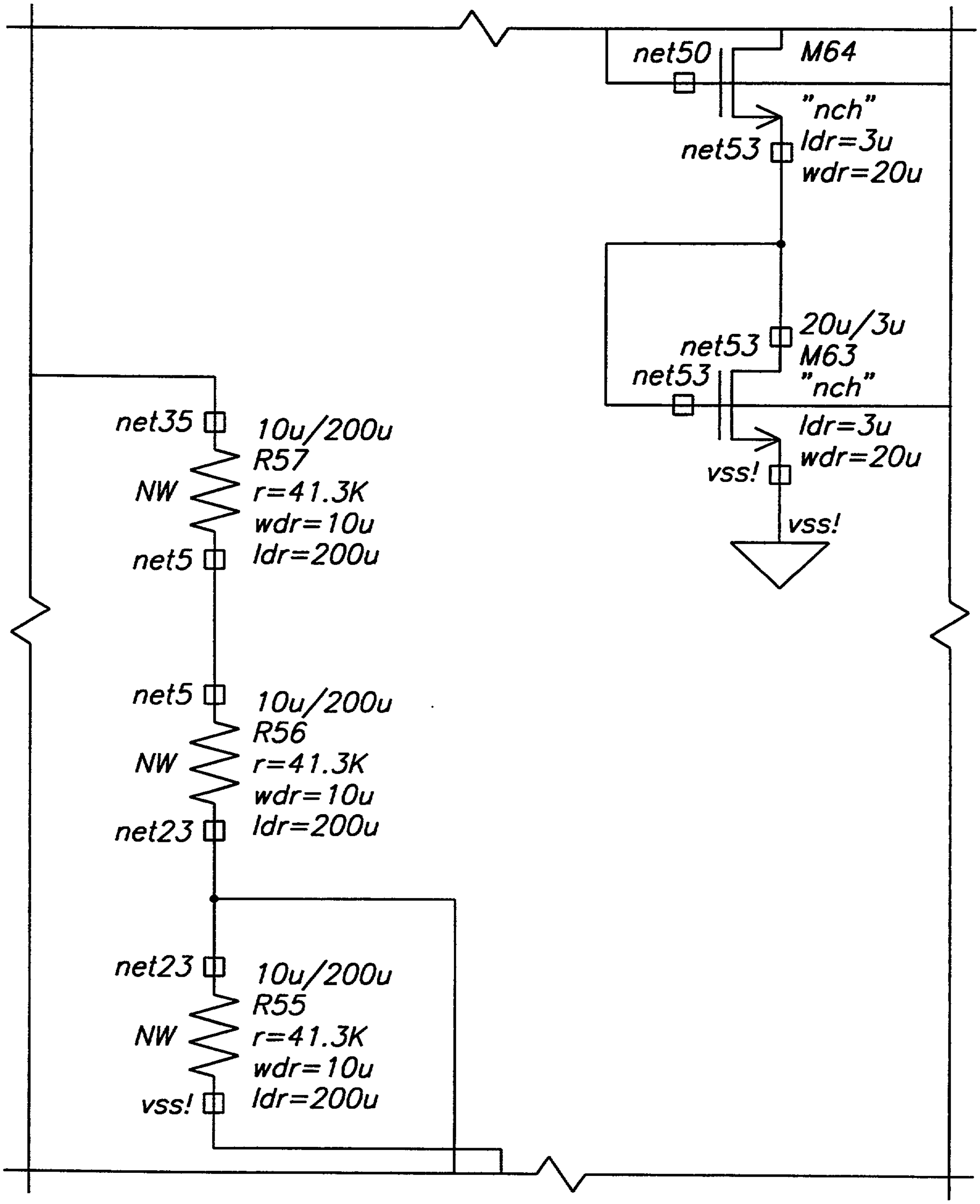

net50
M64
"nch"
net53
ldr=3u
wdr=20u
20u/3u
net53
M63
net53
"nch"
ldr=3u
wdr=20u
vss!
vss!
net35
10u/200u
R57
NW
r=41.3K
wdr=10u
net5
ldr=200u
net5
10u/200u
R56
NW
r=41.3K
wdr=10u
net23
ldr=200u
net23
10u/200u
R55
NW
r=41.3K
wdr=10u
vss!
ldr=200u

Fig 9.0302CI

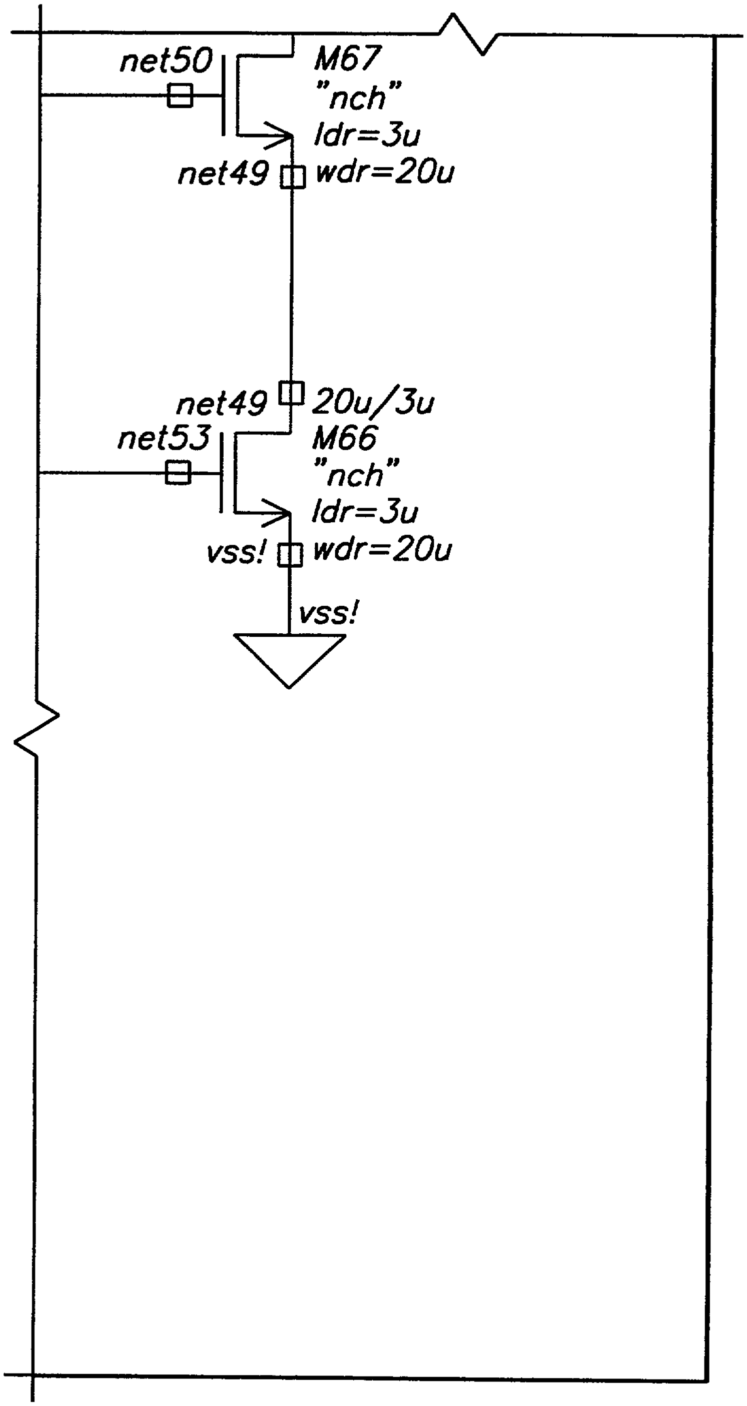

net50
M67
"nch"
ldr=3u
net49
wdr=20u
net49
20u/3u
net53
M66
"nch"
ldr=3u
vss!
wdr=20u
vss!

Fig 9.0302Cd

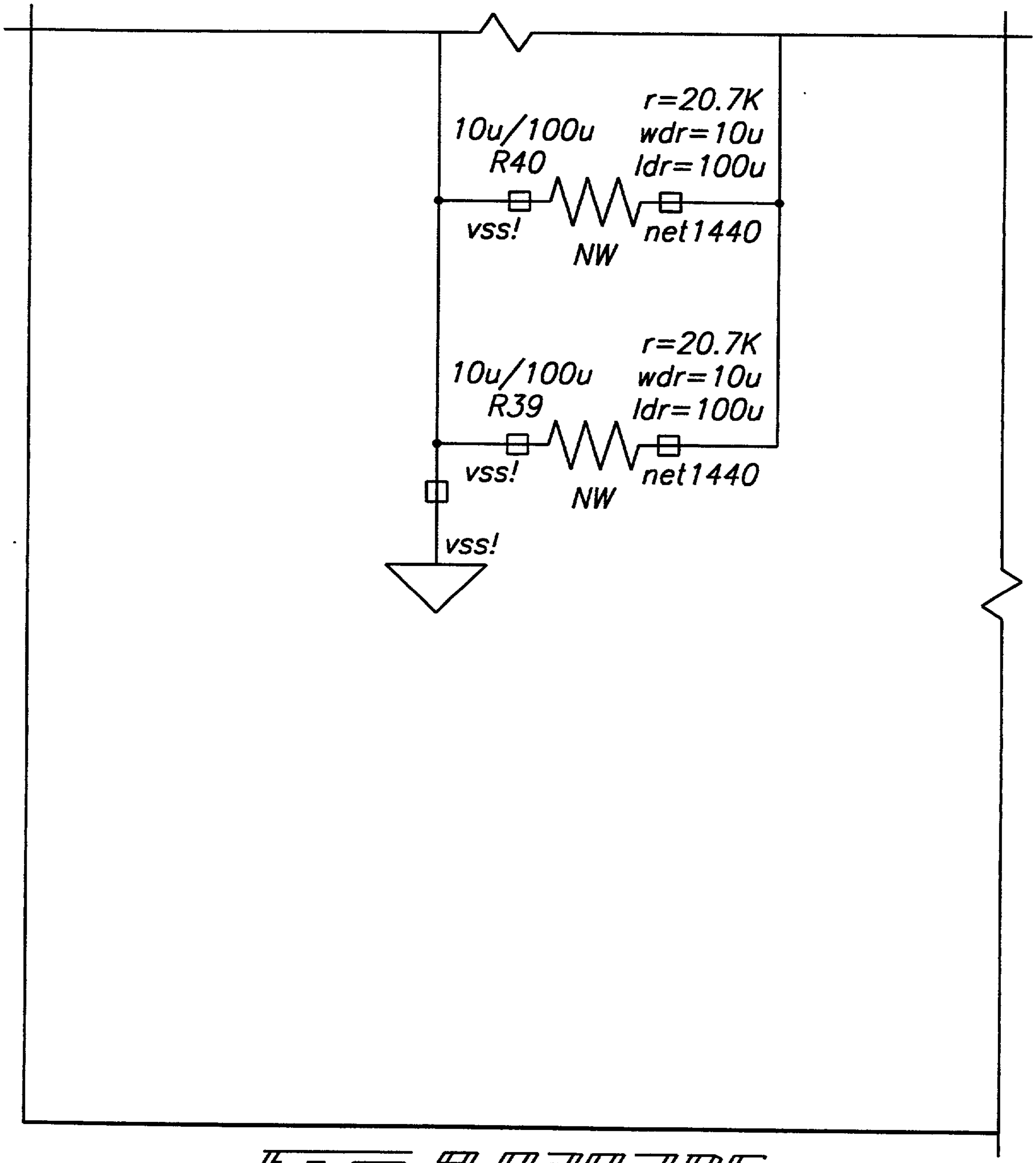

r=20.7K
wdr=10u
ldr=100u
10u/100u
R40
vss!
NW
net1440
r=20.7K
wdr=10u
ldr=100u
10u/100u
R39
vss!
NW
net1440
vss!

Fig 9.0302DG

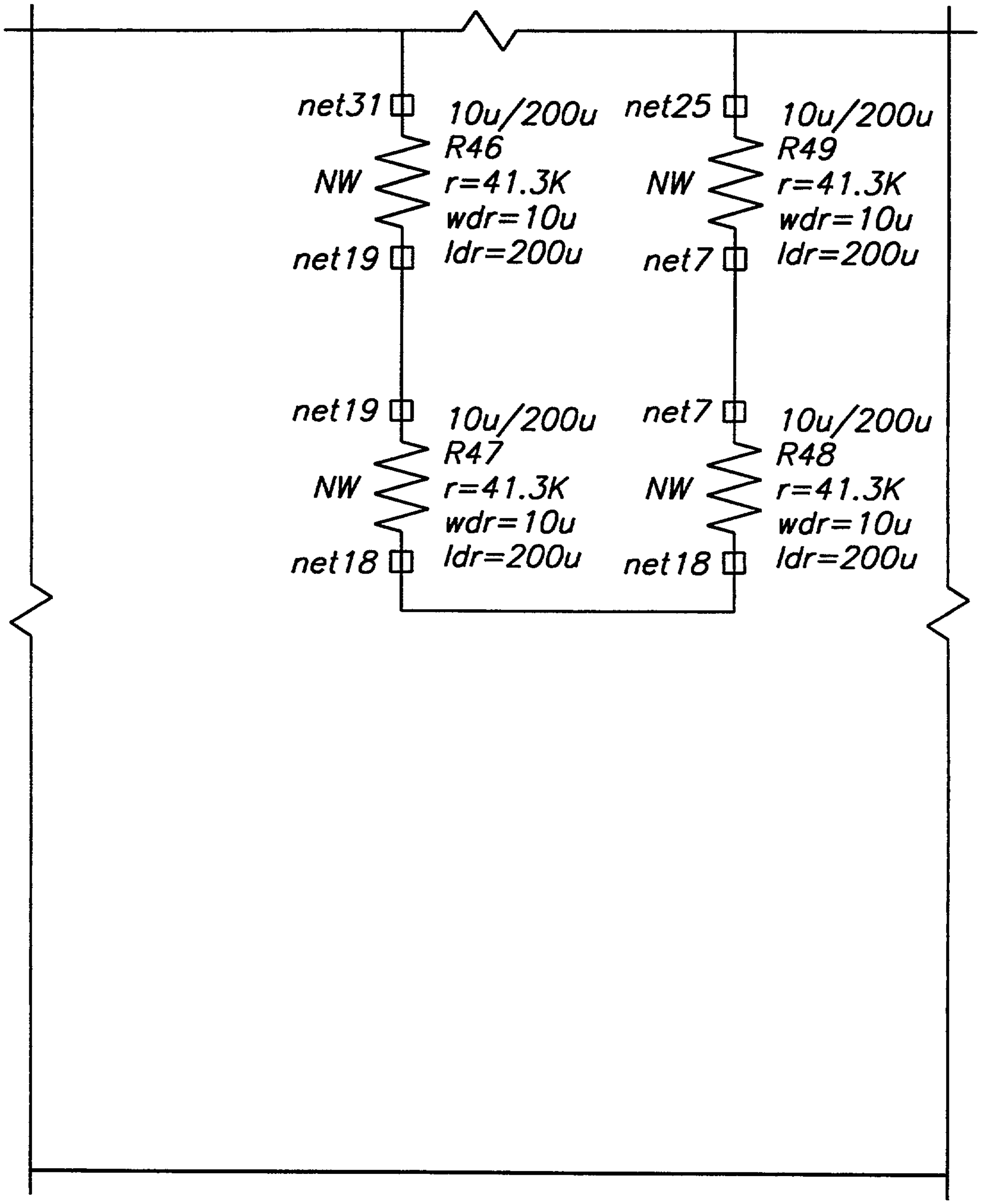

net31
10u/200u
R46
NW
r=41.3K
wdr=10u
net19
ldr=200u
net25
10u/200u
R49
NW
r=41.3K
wdr=10u
net7
ldr=200u
net19
10u/200u
R47
NW
r=41.3K
wdr=10u
net18
ldr=200u
net7
10u/200u
R48
NW
r=41.3K
wdr=10u
net18
ldr=200u

Fig 9.0302DH

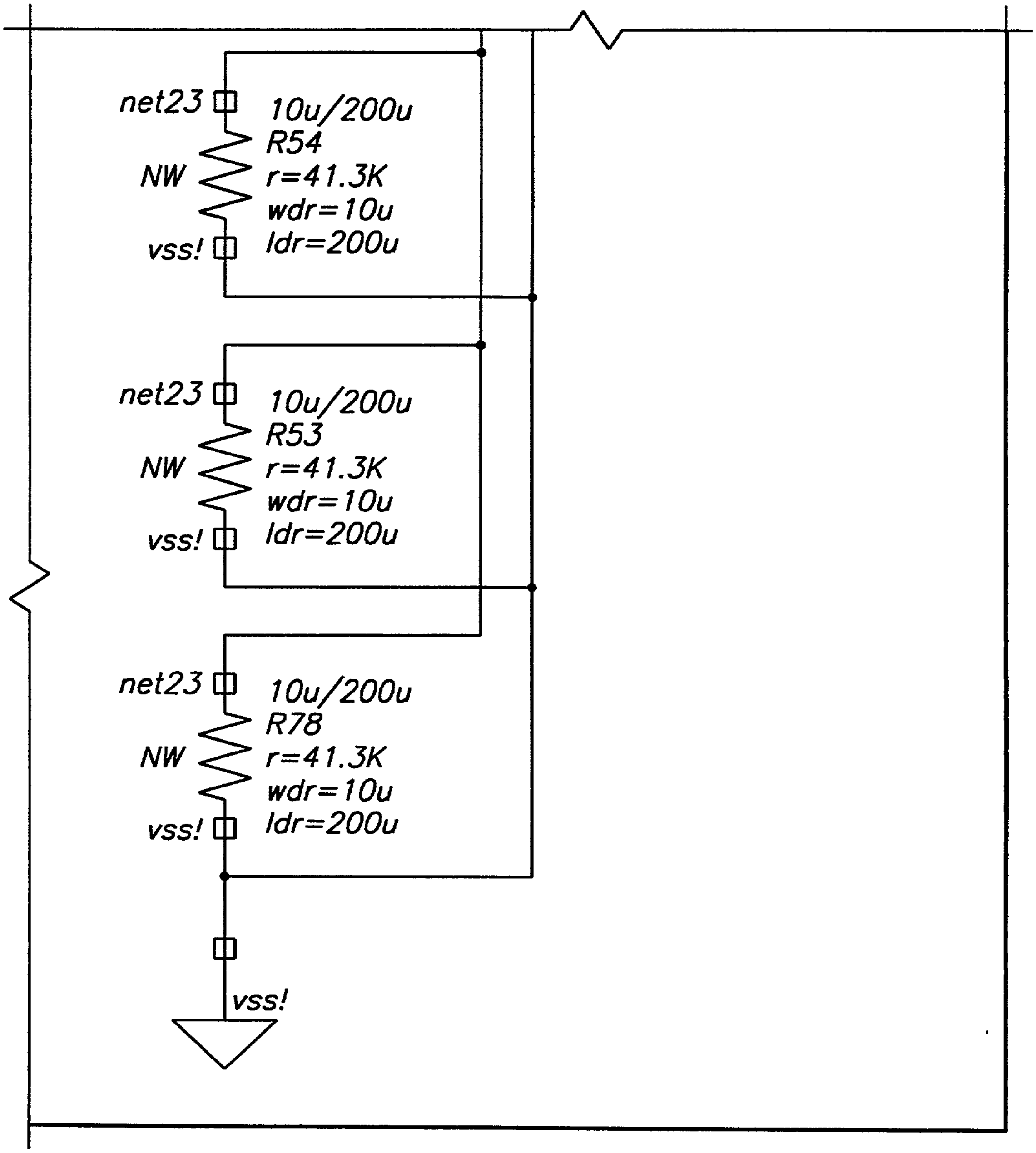

net23
10u/200u
R54
NW
r=41.3K
wdr=10u
vss!
ldr=200u
net23
10u/200u
R53
NW
r=41.3K
wdr=10u
vss!
ldr=200u
net23
10u/200u
R78
NW
r=41.3K
wdr=10u
vss!
ldr=200u
vss!

Fig 9.0302DI

9.0303AA	9.0303AB	9.0303AC	9.0303AD	9.0303AE	9.0303AF
9.0303BA	9.0303BB	9.0303BC	9.0303BD	9.0303BE	9.0303BF
	9.0303CB	9.0303CC	9.0303CD	9.0303CE	9.0303CF

FIG 9.0303

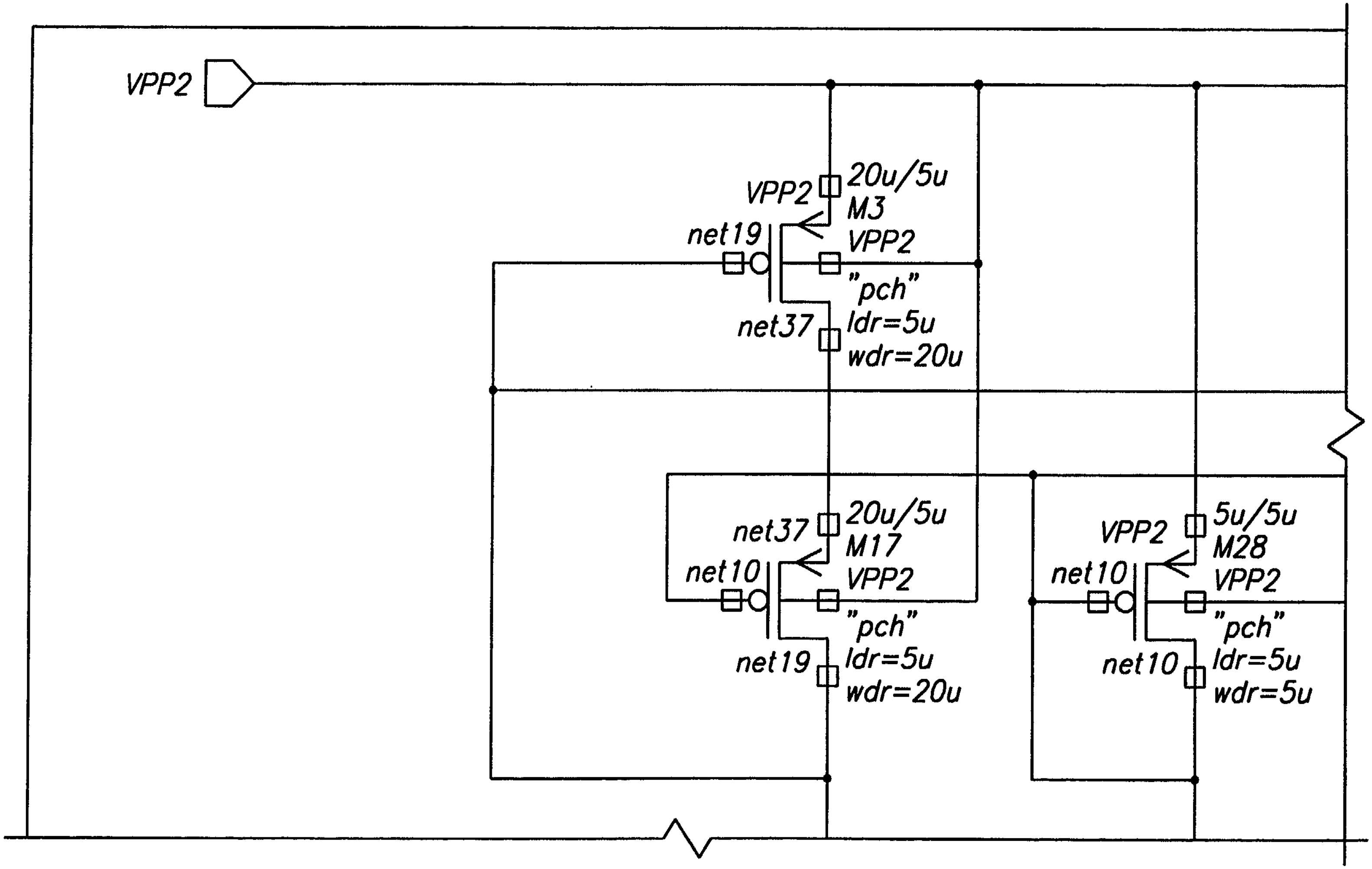

VPP2
VPP2
20u/5u
M3
VPP2
net19
"pch"
net37
ldr=5u
wdr=20u
net37
20u/5u
M17
net10
VPP2
"pch"
net19
ldr=5u
wdr=20u
VPP2
5u/5u
M28
net10
VPP2
"pch"
net10
ldr=5u
wdr=5u

Fig 9.0303AA

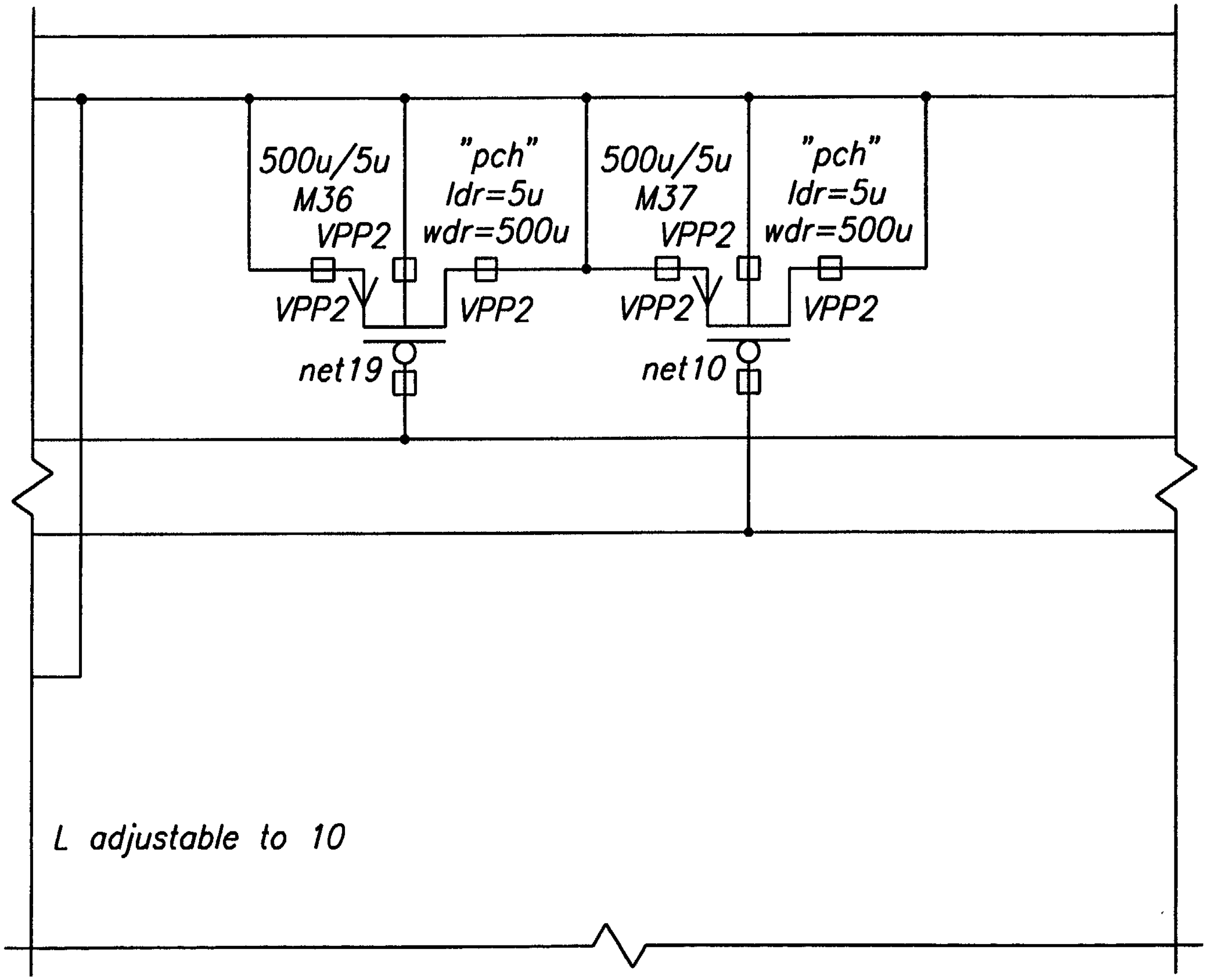

500u/5u
M36
VPP2
VPP2
"pch"
ldr=5u
wdr=500u
VPP2
net19
500u/5u
M37
VPP2
VPP2
"pch"
ldr=5u
wdr=500u
VPP2
net10
L adjustable to 10

Fig 9.0303AB

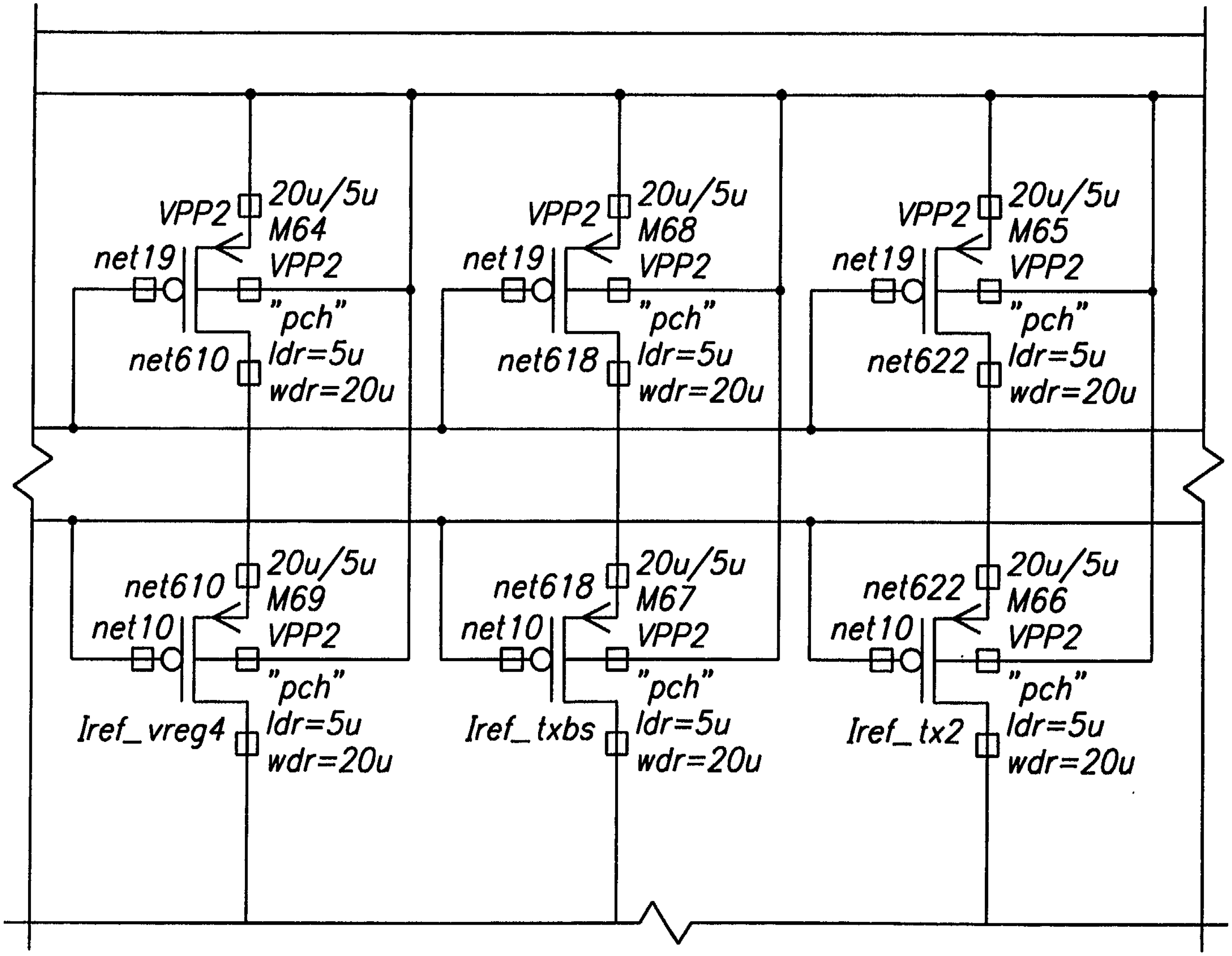

VPP2
20u/5u
M64
net19
VPP2
"pch"
net610
ldr=5u
wdr=20u
VPP2
20u/5u
M68
net19
VPP2
"pch"
net618
ldr=5u
wdr=20u
VPP2
20u/5u
M65
net19
VPP2
"pch"
net622
ldr=5u
wdr=20u
net610
20u/5u
M69
net10
VPP2
"pch"
Iref_vreg4
ldr=5u
wdr=20u
net618
20u/5u
M67
net10
VPP2
"pch"
Iref_txbs
ldr=5u
wdr=20u
net622
20u/5u
M66
net10
VPP2
"pch"
Iref_tx2
ldr=5u
wdr=20u

Fig 9.0303AC

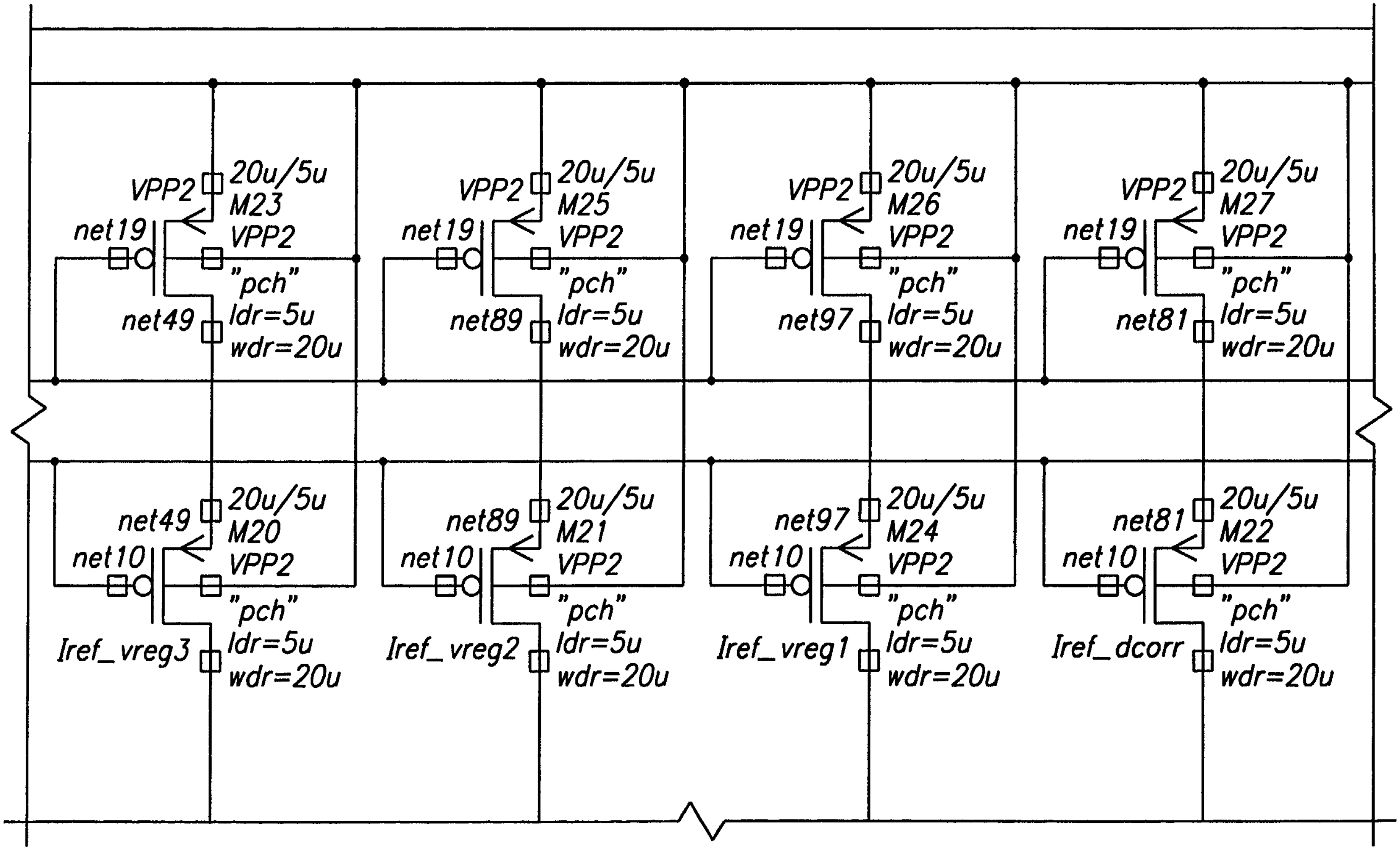

VPP2
net19
20u/5u
M23
VPP2
"pch"
net49
ldr=5u
wdr=20u
VPP2
net19
20u/5u
M25
VPP2
"pch"
net89
ldr=5u
wdr=20u
VPP2
net19
20u/5u
M26
VPP2
"pch"
net97
ldr=5u
wdr=20u
VPP2
net19
20u/5u
M27
VPP2
"pch"
net81
ldr=5u
wdr=20u
net49
net10
20u/5u
M20
VPP2
"pch"
Iref_vreg3
ldr=5u
wdr=20u
net89
net10
20u/5u
M21
VPP2
"pch"
Iref_vreg2
ldr=5u
wdr=20u
net97
net10
20u/5u
M24
VPP2
"pch"
Iref_vreg1
ldr=5u
wdr=20u
net81
net10
20u/5u
M22
VPP2
"pch"
Iref_dcorr
ldr=5u
wdr=20u

Fig 9.0303AD

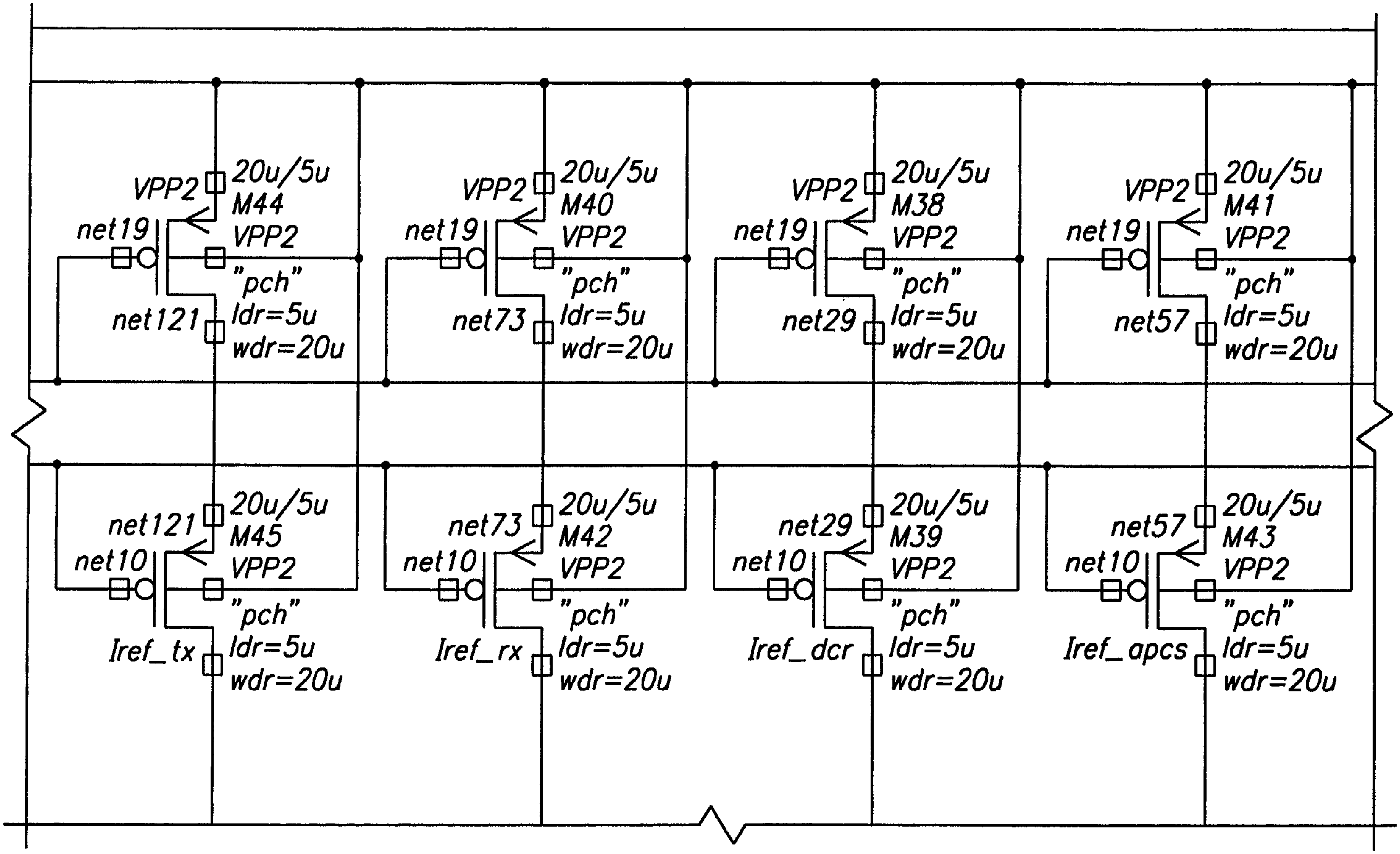

VPP2
20u/5u
M44
net19
VPP2
"pch"
net121
ldr=5u
wdr=20u
VPP2
20u/5u
M40
net19
VPP2
"pch"
net73
ldr=5u
wdr=20u
VPP2
20u/5u
M38
net19
VPP2
"pch"
net29
ldr=5u
wdr=20u
VPP2
20u/5u
M41
net19
VPP2
"pch"
net57
ldr=5u
wdr=20u
net121
20u/5u
M45
net10
VPP2
"pch"
Iref_tx
ldr=5u
wdr=20u
net73
20u/5u
M42
net10
VPP2
"pch"
Iref_rx
ldr=5u
wdr=20u
net29
20u/5u
M39
net10
VPP2
"pch"
Iref_dcr
ldr=5u
wdr=20u
net57
20u/5u
M43
net10
VPP2
"pch"
Iref_apcs
ldr=5u
wdr=20u

FIG 9.0303AE

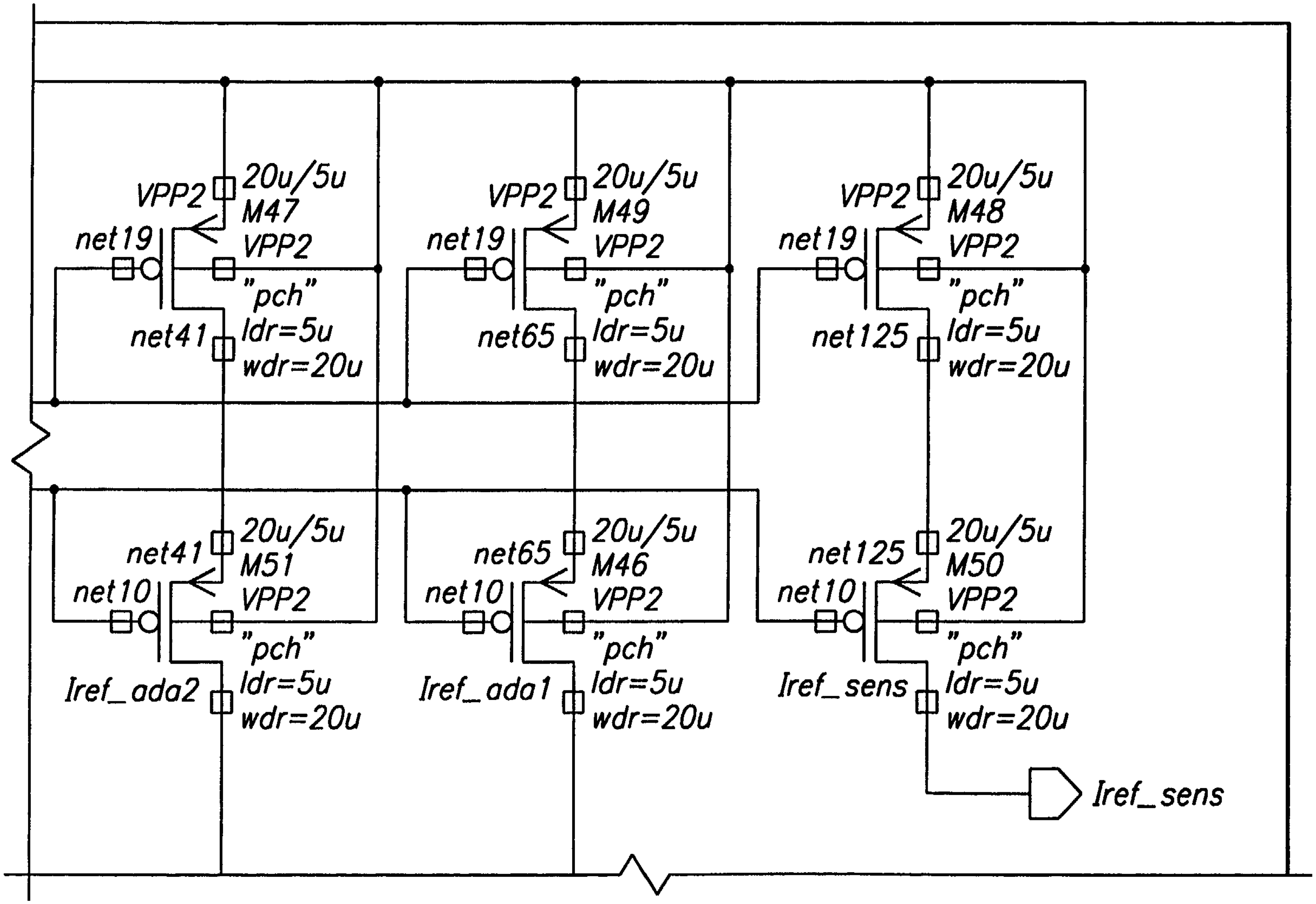

VPP2
20u/5u
M47
net19
VPP2
"pch"
net41
ldr=5u
wdr=20u
VPP2
20u/5u
M49
net19
VPP2
"pch"
net65
ldr=5u
wdr=20u
VPP2
20u/5u
M48
net19
VPP2
"pch"
net125
ldr=5u
wdr=20u
net41
20u/5u
M51
net10
VPP2
"pch"
Iref_ada2
ldr=5u
wdr=20u
net65
20u/5u
M46
net10
VPP2
"pch"
Iref_ada1
ldr=5u
wdr=20u
net125
20u/5u
M50
net10
VPP2
"pch"
Iref_sens
ldr=5u
wdr=20u
Iref_sens

Fig 9.0303AF

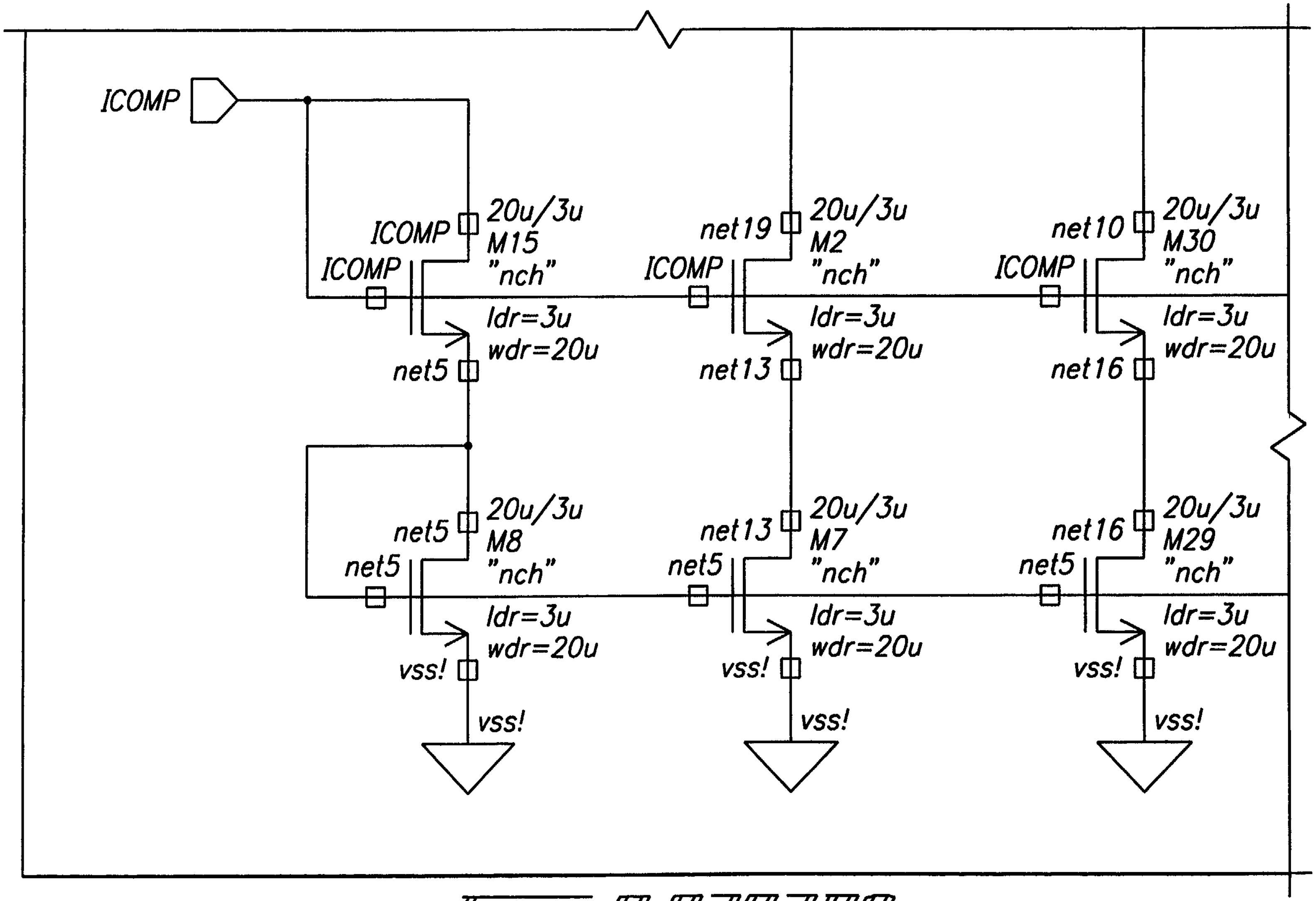

ICOMP
ICOMP
ICOMP
20u/3u
M15
"nch"
ldr=3u
wdr=20u
net5
net19
ICOMP
20u/3u
M2
"nch"
ldr=3u
wdr=20u
net13
net10
ICOMP
20u/3u
M30
"nch"
ldr=3u
wdr=20u
net16
net5
net5
20u/3u
M8
"nch"
ldr=3u
wdr=20u
vss!
vss!
net13
net5
20u/3u
M7
"nch"
ldr=3u
wdr=20u
vss!
vss!
net16
net5
20u/3u
M29
"nch"
ldr=3u
wdr=20u
vss!
vss!

Fig 9.0303BA

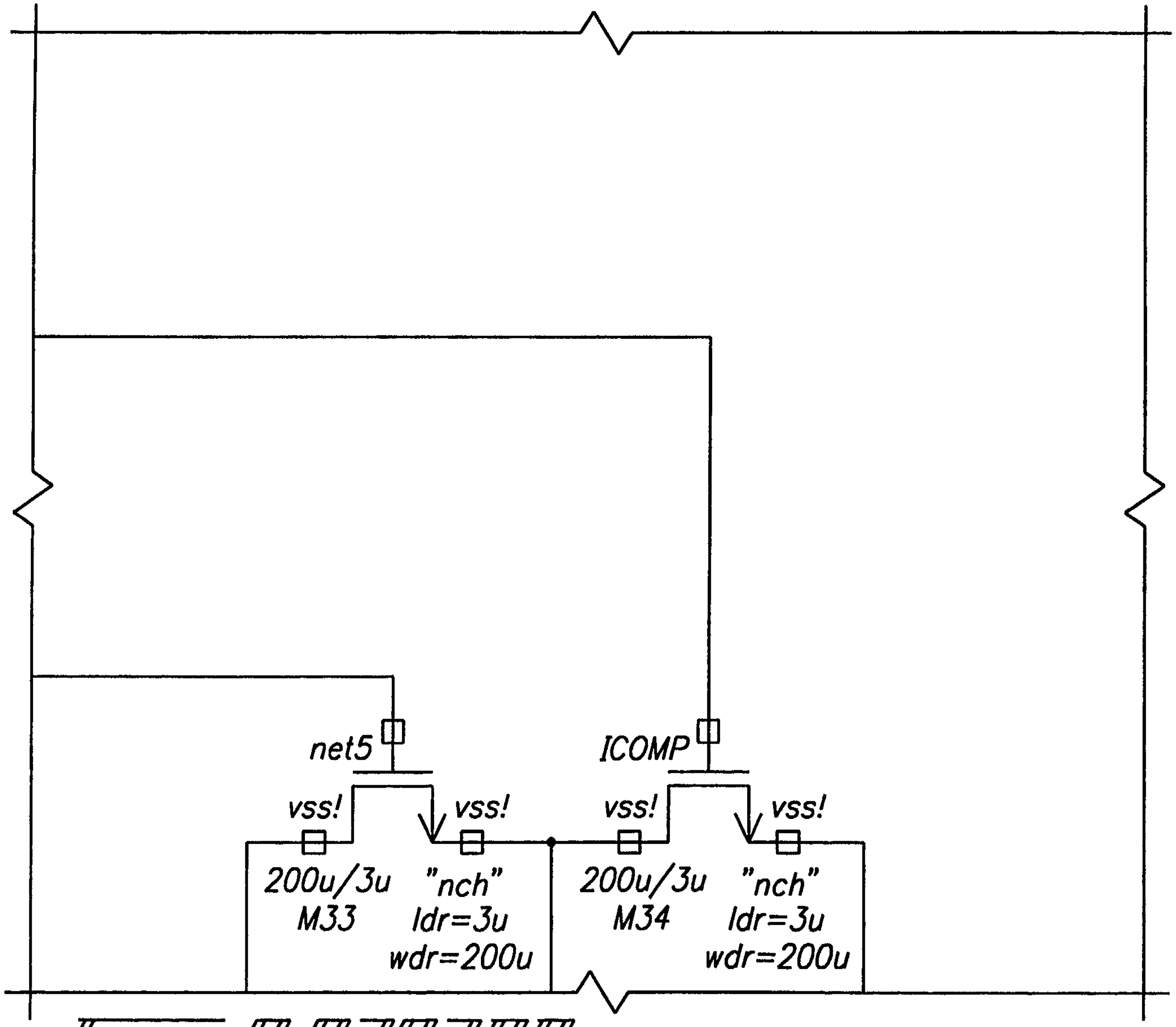

net5
ICOMP
vss!
vss!
vss!
vss!
200u/3u
M33
"nch"
ldr=3u
wdr=200u
200u/3u
M34
"nch"
ldr=3u
wdr=200u

Fig 9.0303BB

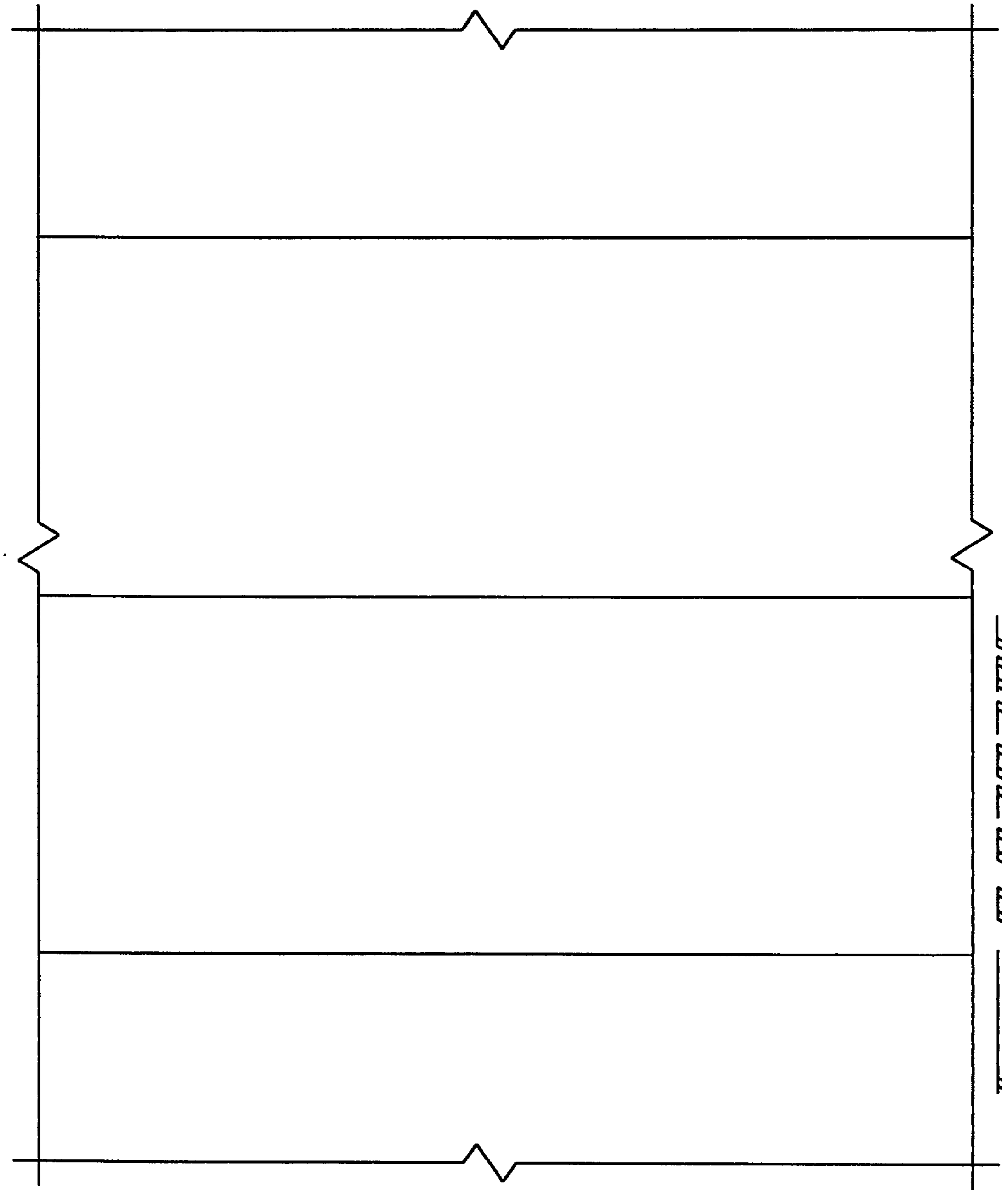


FIG 9.0303BC

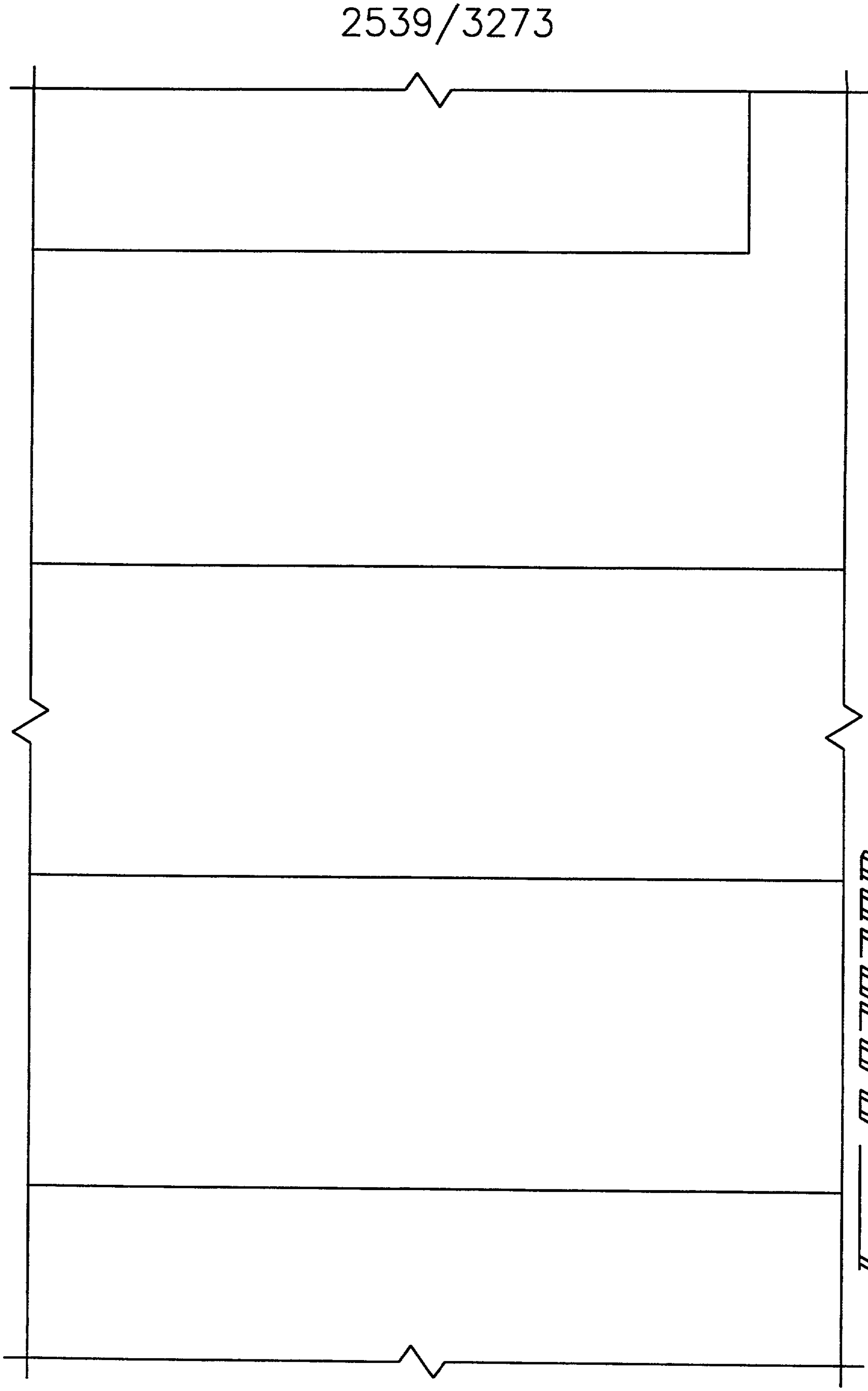


FIG. 9.030380

2540/3273

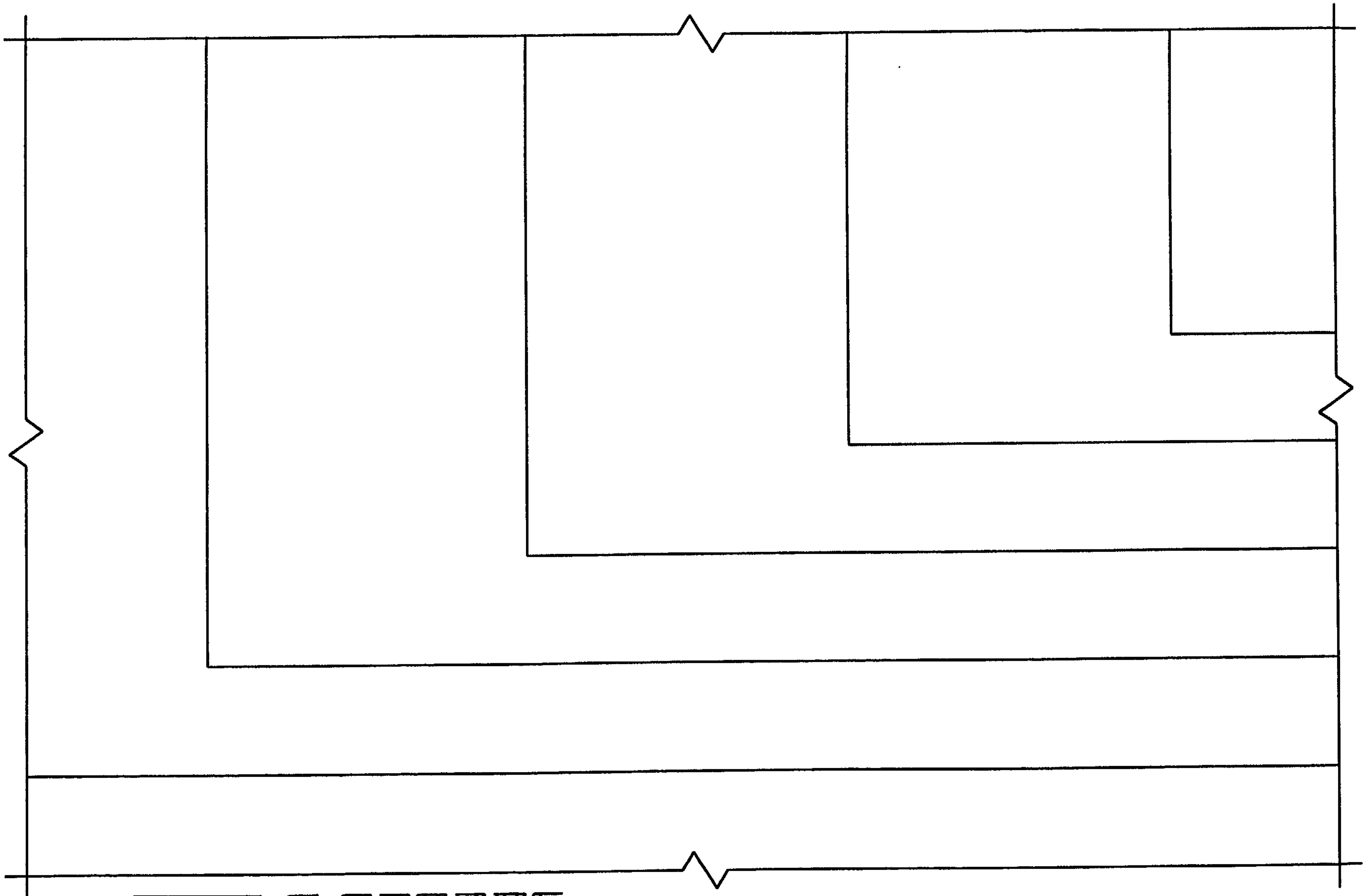


FIG 9.0303BE

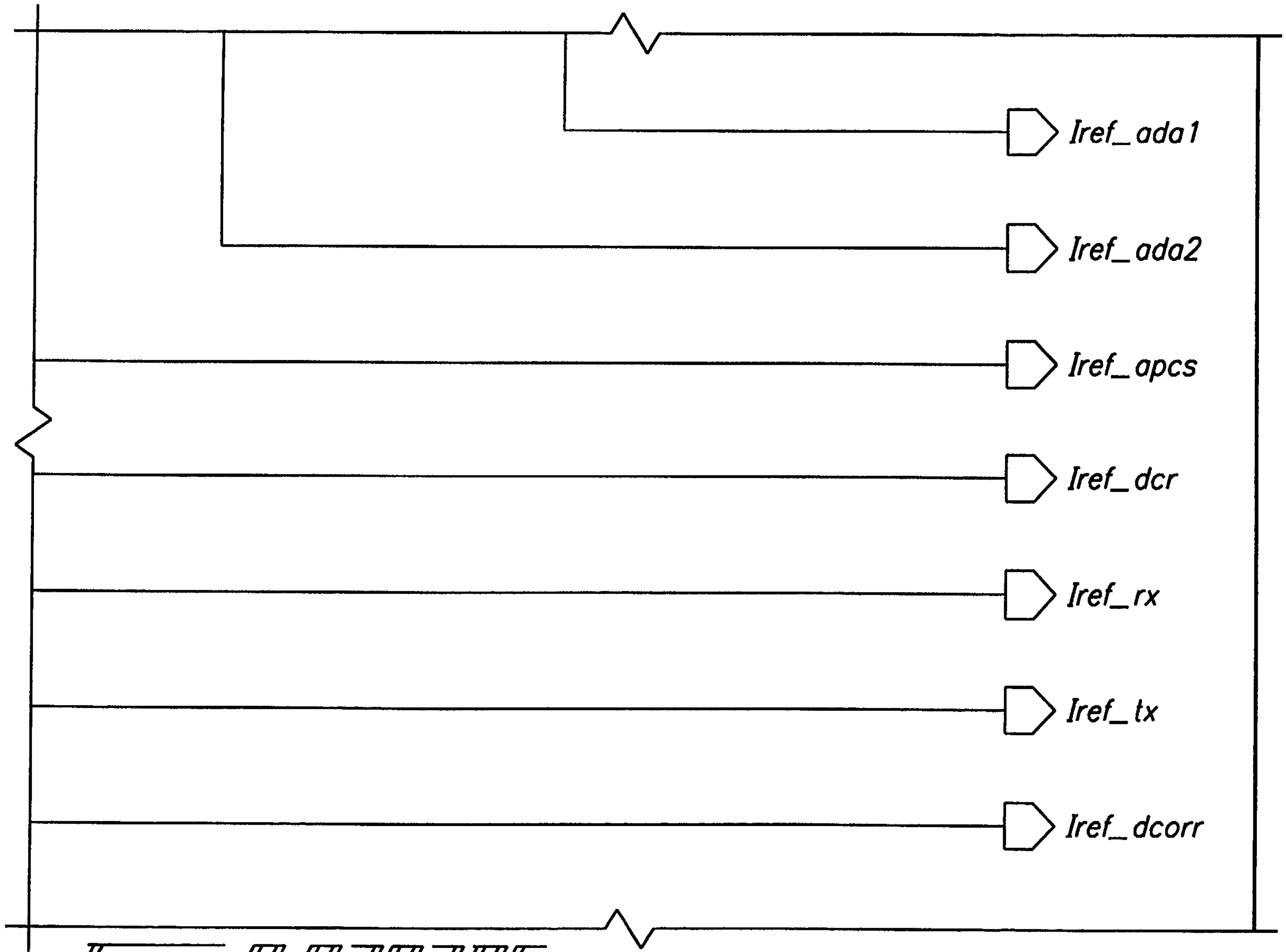

Iref_ada1
Iref_ada2
Iref_apcs
Iref_dcr
Iref_rx
Iref_tx
Iref_dcorr

Fig 9.0303BF

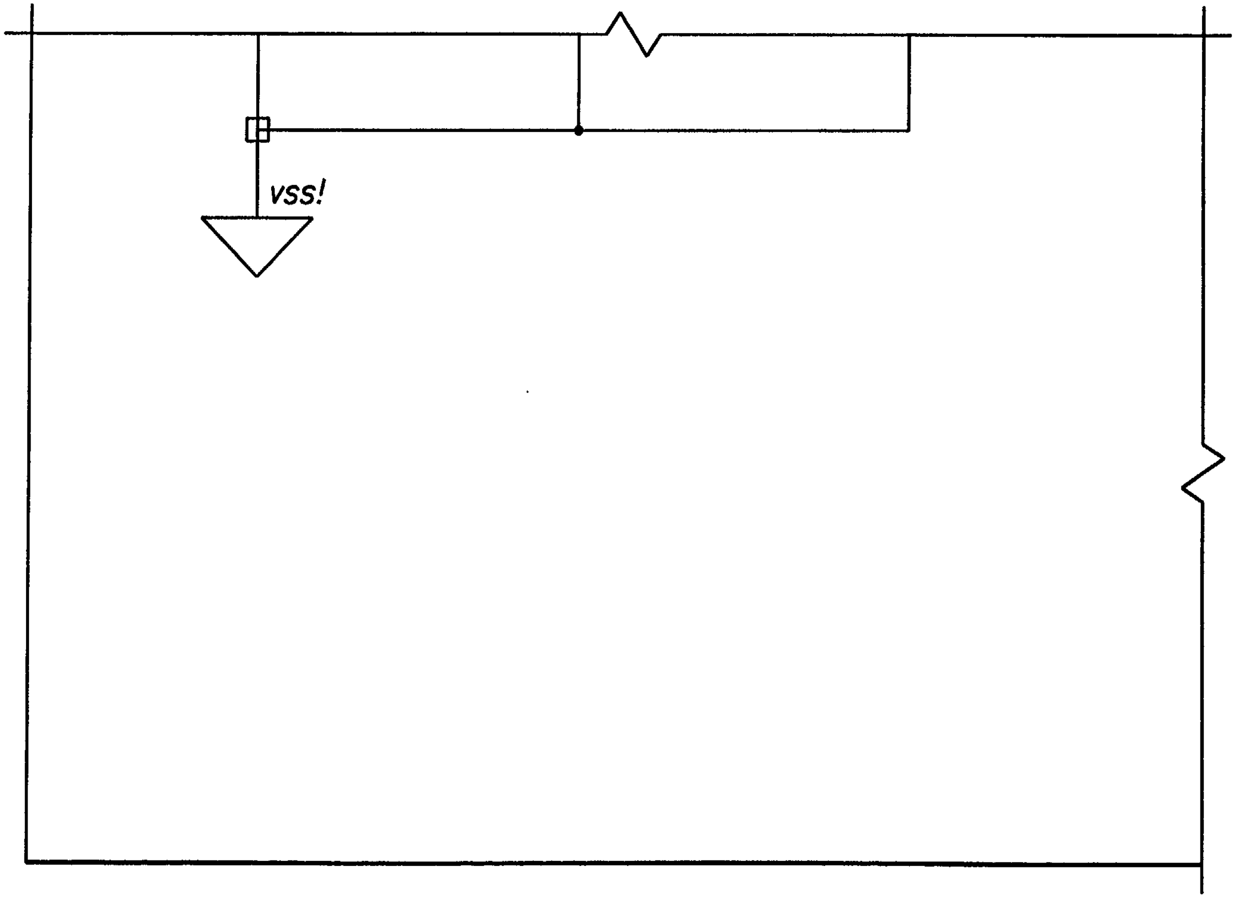


Fig 9.0303CB

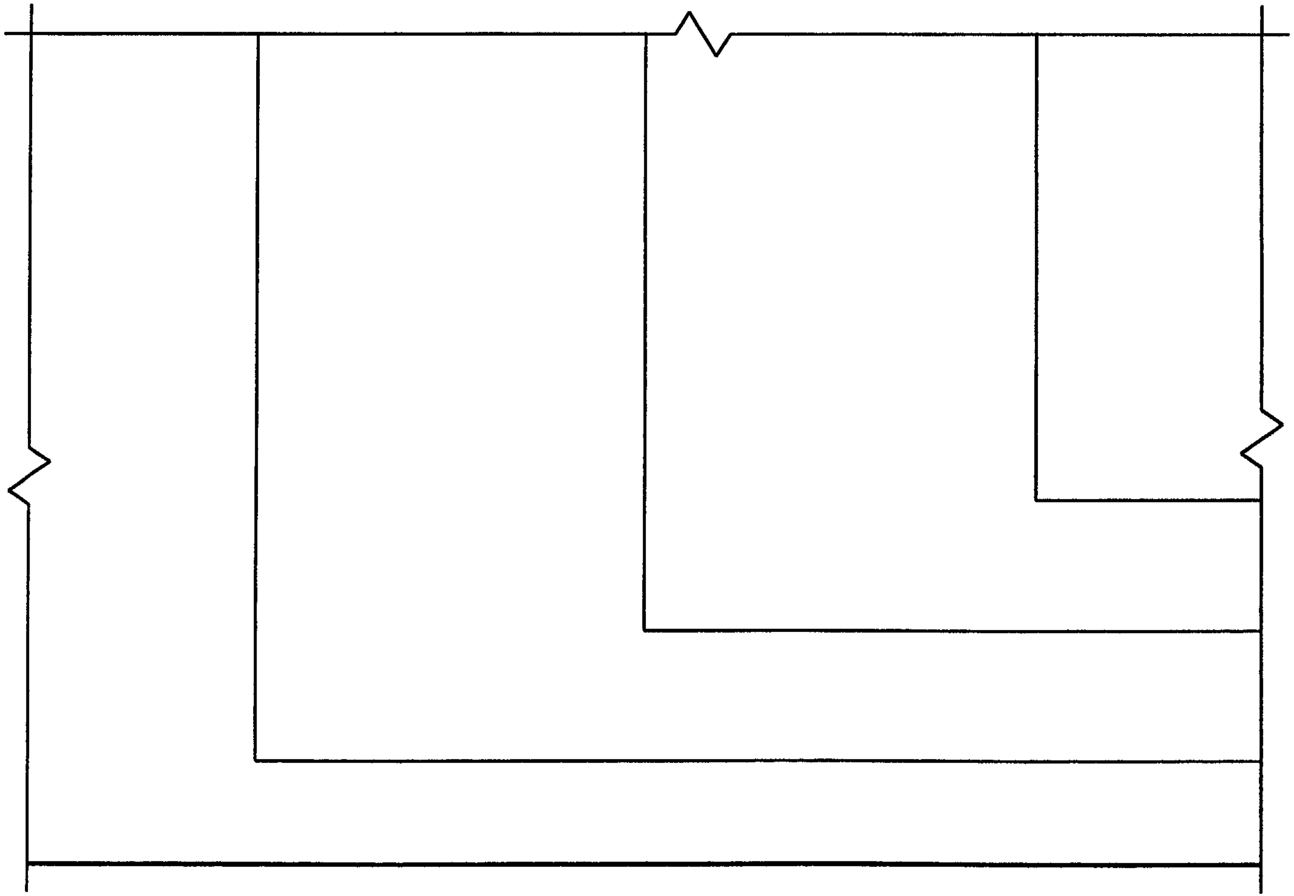


Fig 9.0303CC

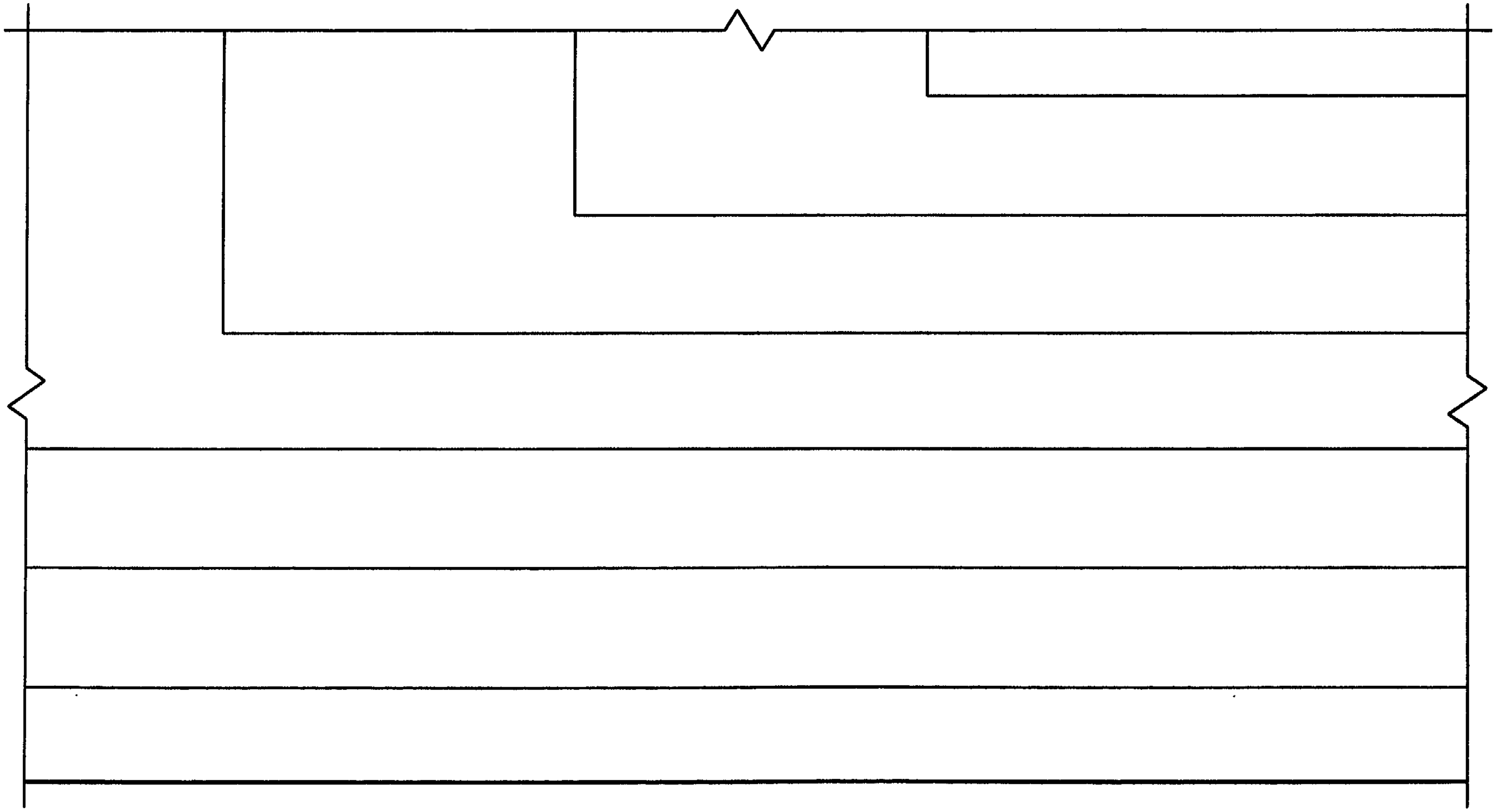


Fig 9.0303CD

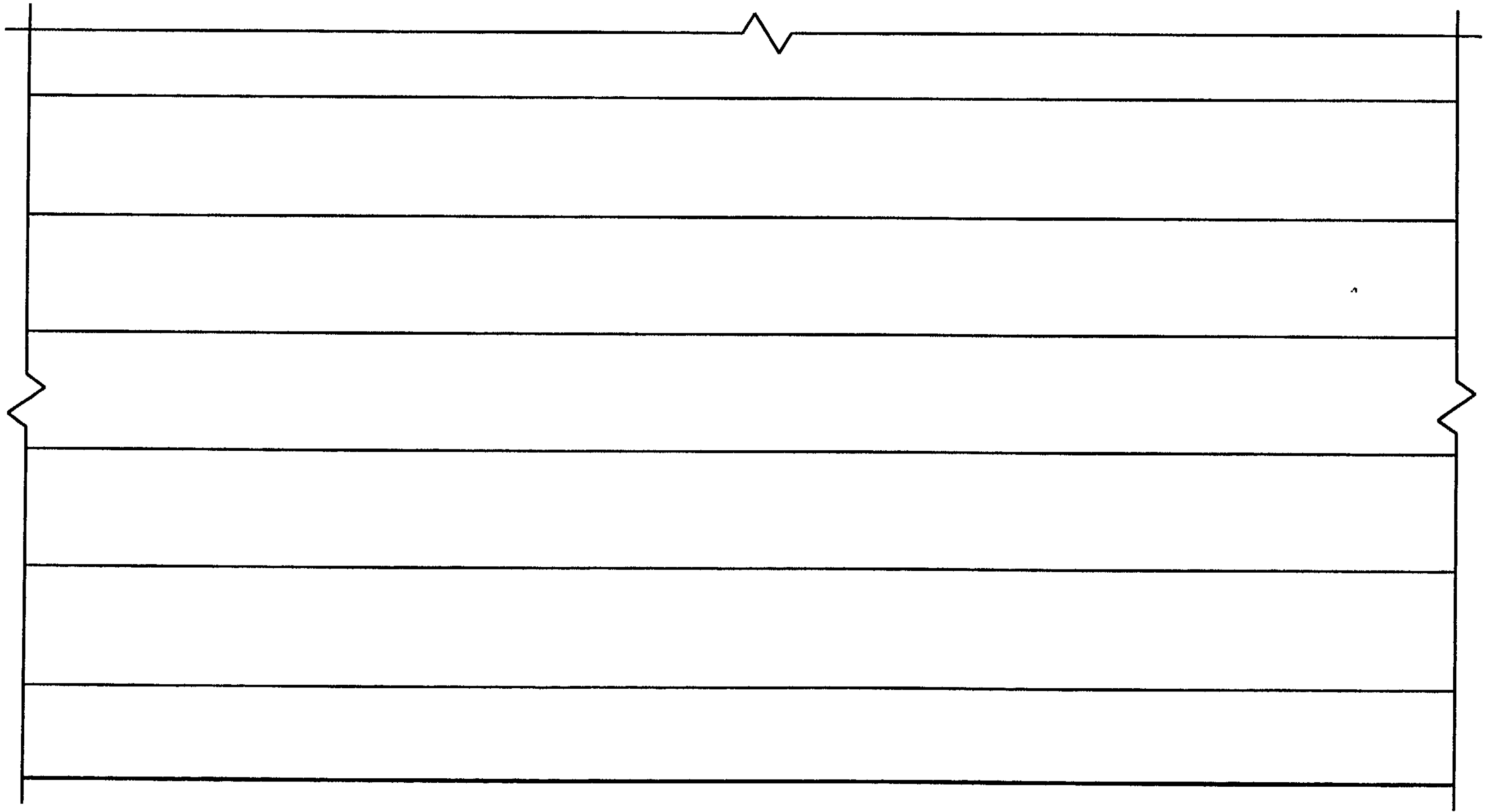


Fig 9.0303CE

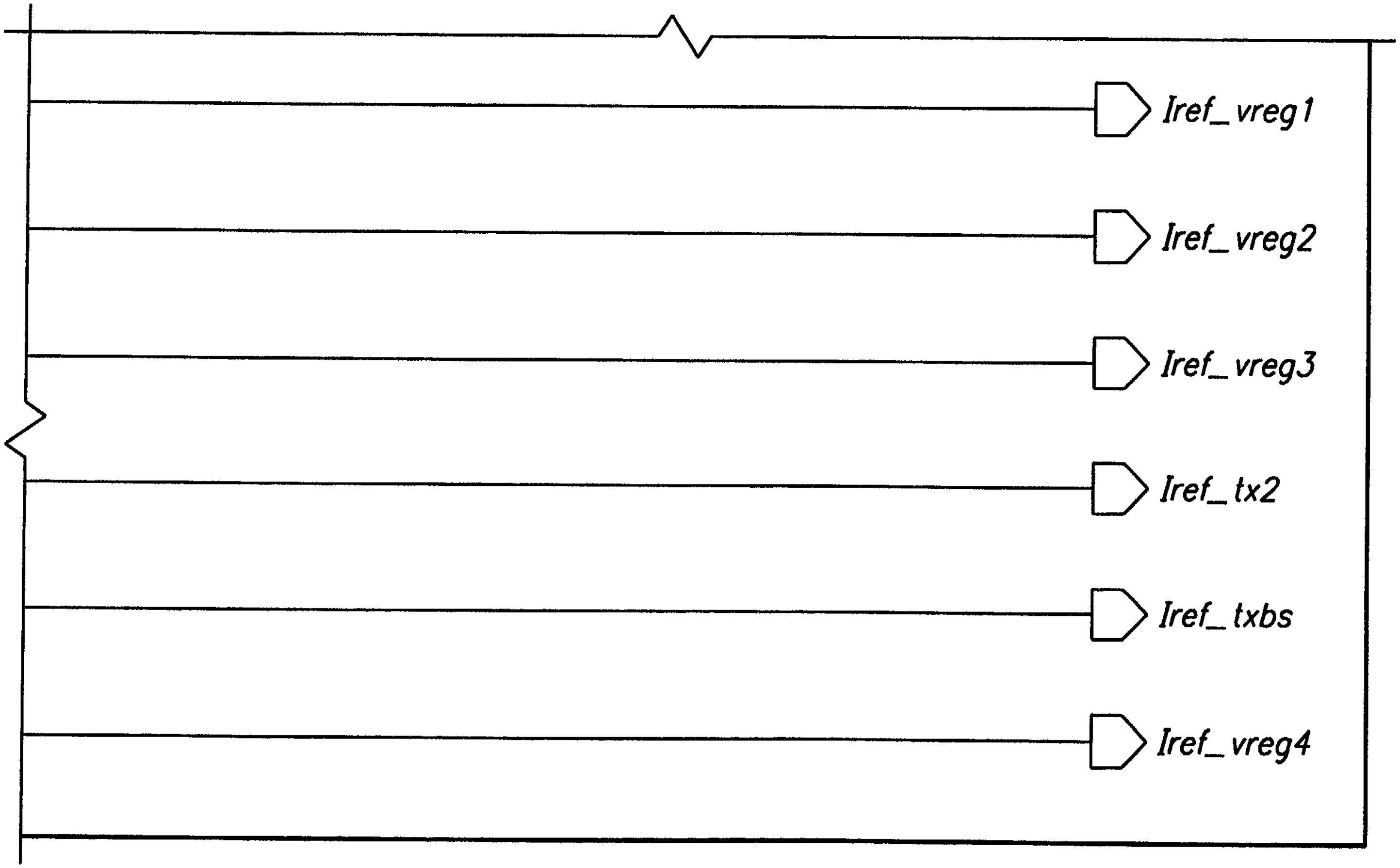

Iref_ vreg1
Iref_ vreg2
Iref_ vreg3
Iref_ tx2
Iref_ txbs
Iref_ vreg4

Fig 9.0303CF

9.04AA	9.04AB	9.04AC	9.04AD	9.04AE
9.04BA	9.04BB	9.04BC	9.04BD	9.04BE
9.04CA	9.04CB	9.04CC	9.04CD	9.04CE

Fig 9.04

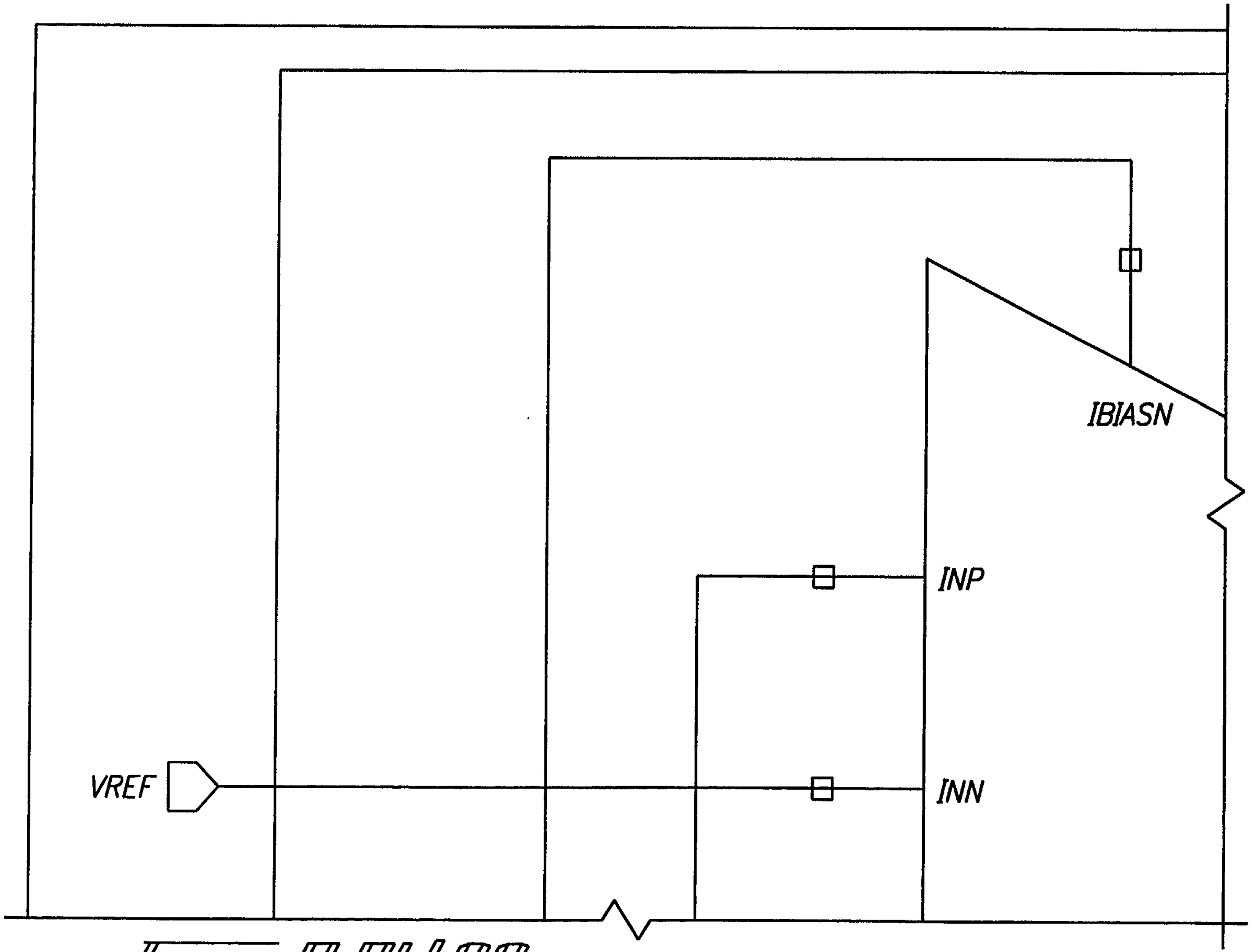


FIG 9.04AA

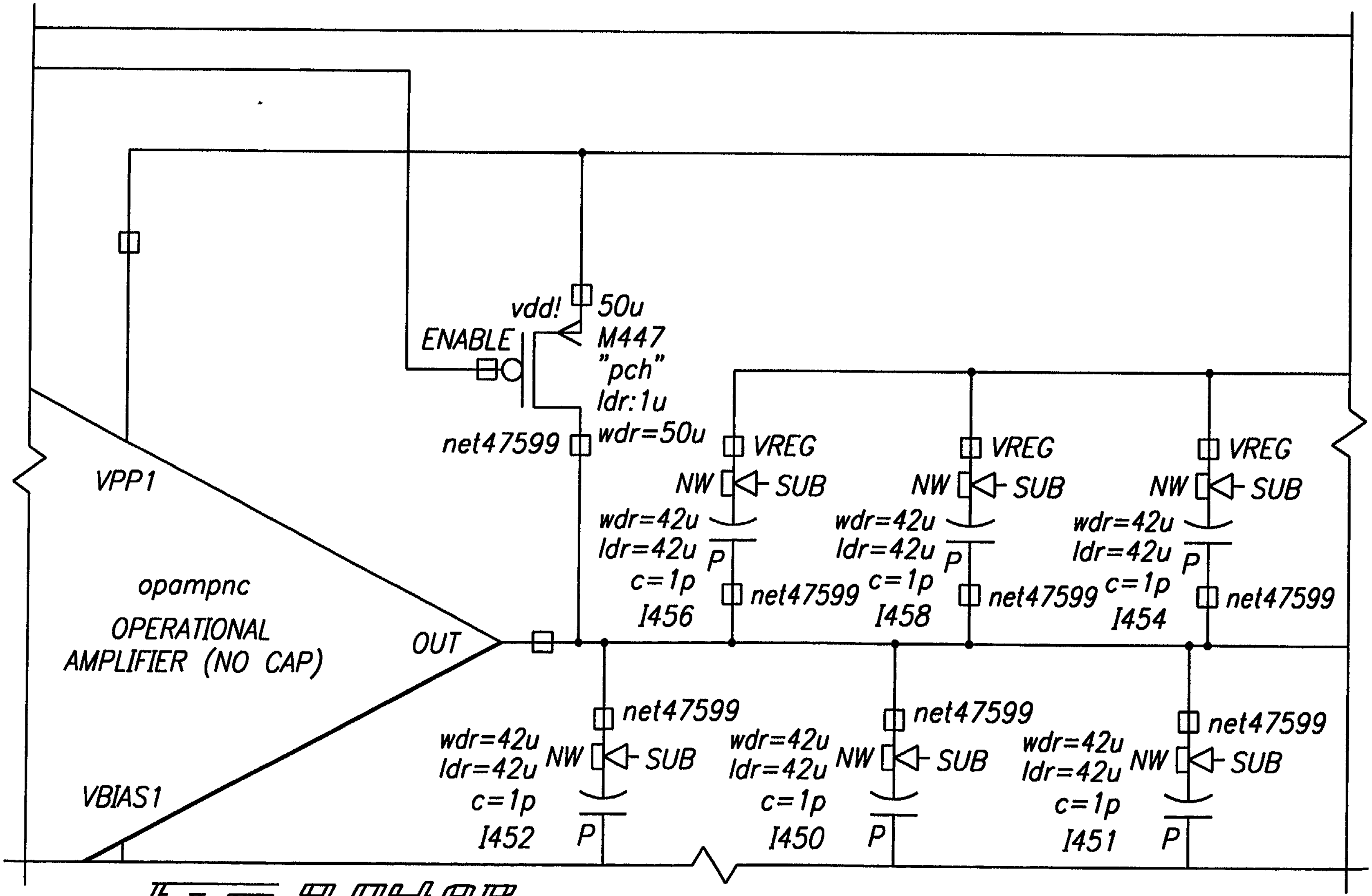

vdd!
50u
M447
"pch"
ldr:1u
wdr=50u
ENABLE
net47599
VPP1
opampnc
OPERATIONAL
AMPLIFIER (NO CAP)
OUT
VBIAS1
VREG
NW
SUB
wdr=42u
ldr=42u
P
c=1p
net47599
I456
VREG
NW
SUB
wdr=42u
ldr=42u
P
c=1p
net47599
I458
VREG
NW
SUB
wdr=42u
ldr=42u
P
c=1p
net47599
I454
net47599
wdr=42u
ldr=42u
NW
SUB
c=1p
I452
P
net47599
wdr=42u
ldr=42u
NW
SUB
c=1p
I450
P
net47599
wdr=42u
ldr=42u
NW
SUB
c=1p
I451
P

FIG 9.04AB

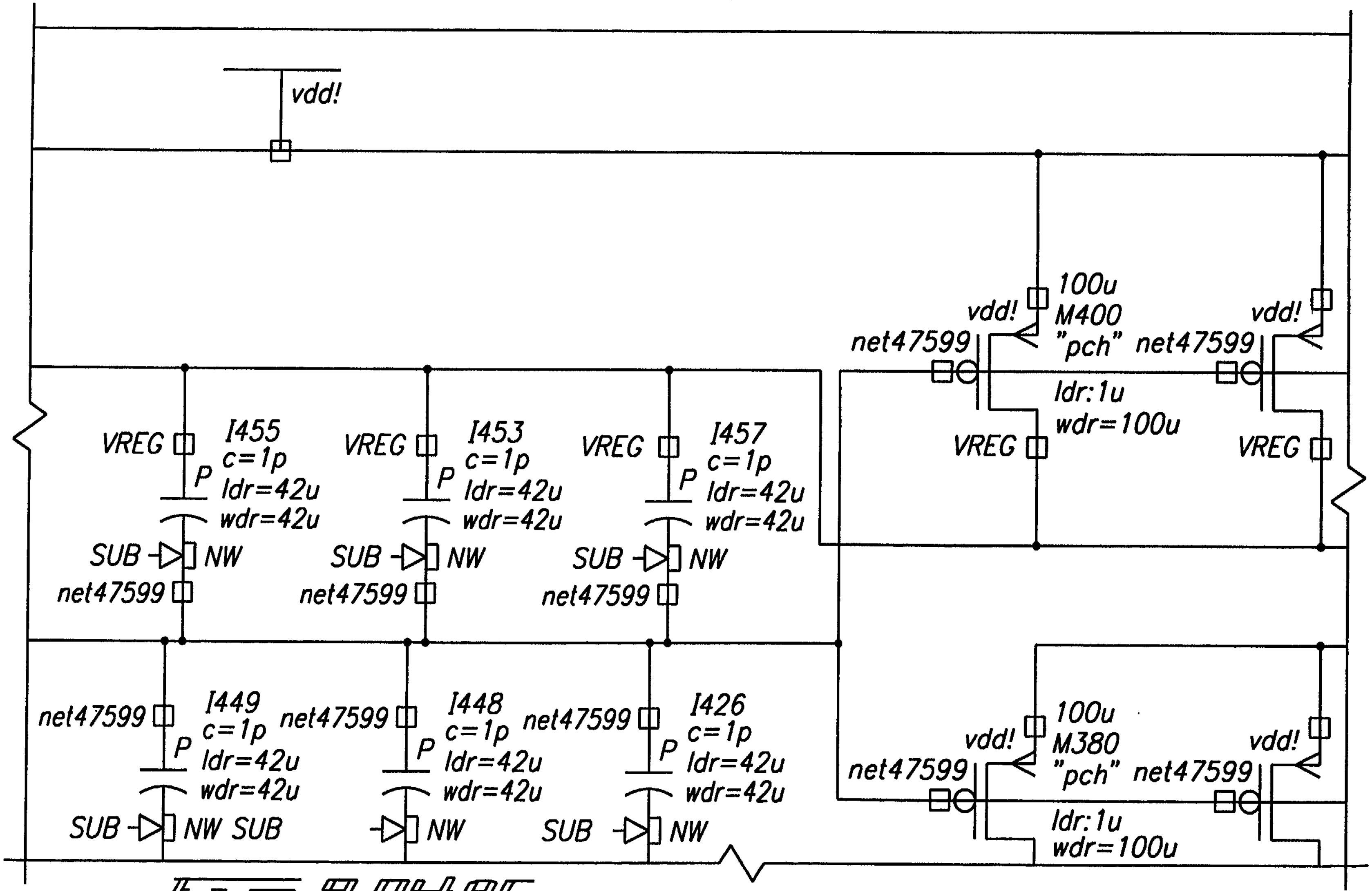

vdd!
I455
c=1p
ldr=42u
wdr=42u
VREG
P
SUB
NW
net47599
I453
c=1p
ldr=42u
wdr=42u
VREG
P
SUB
NW
net47599
I457
c=1p
ldr=42u
wdr=42u
VREG
P
SUB
NW
net47599
I449
c=1p
ldr=42u
wdr=42u
net47599
P
SUB
NW SUB
I448
c=1p
ldr=42u
wdr=42u
net47599
P
NW
I426
c=1p
ldr=42u
wdr=42u
net47599
P
SUB
NW
100u
M400
"pch"
ldr:1u
wdr=100u
vdd!
net47599
VREG
vdd!
net47599
VREG
100u
M380
"pch"
ldr:1u
wdr=100u
vdd!
net47599
vdd!
net47599

Fig 9.04AC

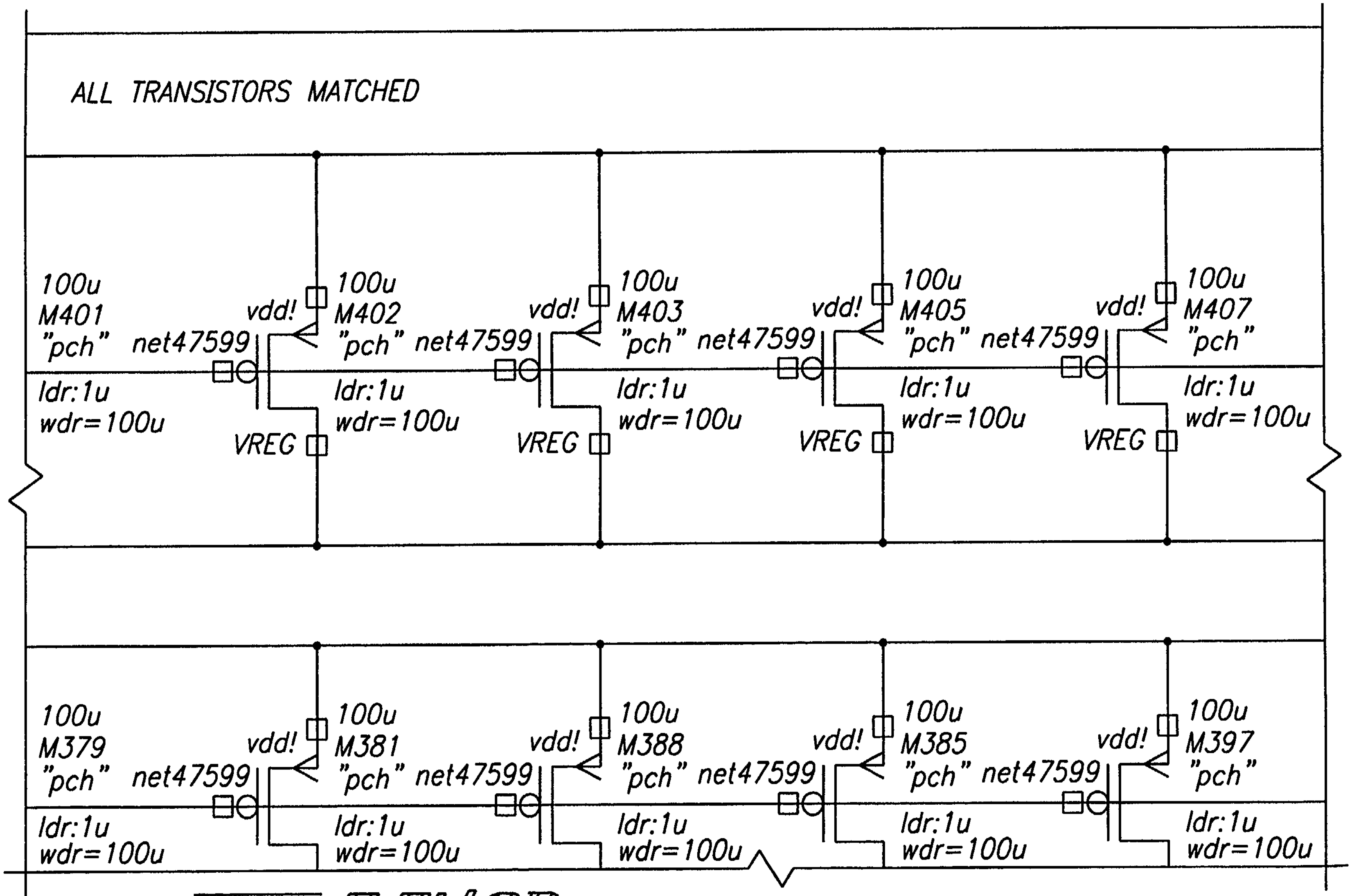

ALL TRANSISTORS MATCHED
100u
M401
"pch"
net47599
ldr:1u
wdr=100u
vdd!
VREG
100u
M402
"pch"
net47599
ldr:1u
wdr=100u
vdd!
VREG
100u
M403
"pch"
net47599
ldr:1u
wdr=100u
vdd!
VREG
100u
M405
"pch"
net47599
ldr:1u
wdr=100u
vdd!
VREG
100u
M407
"pch"
ldr:1u
wdr=100u
100u
M379
"pch"
net47599
ldr:1u
wdr=100u
vdd!
100u
M381
"pch"
net47599
ldr:1u
wdr=100u
vdd!
100u
M388
"pch"
net47599
ldr:1u
wdr=100u
vdd!
100u
M385
"pch"
net47599
ldr:1u
wdr=100u
vdd!
100u
M397
"pch"
ldr:1u
wdr=100u

Fig 9.04AD

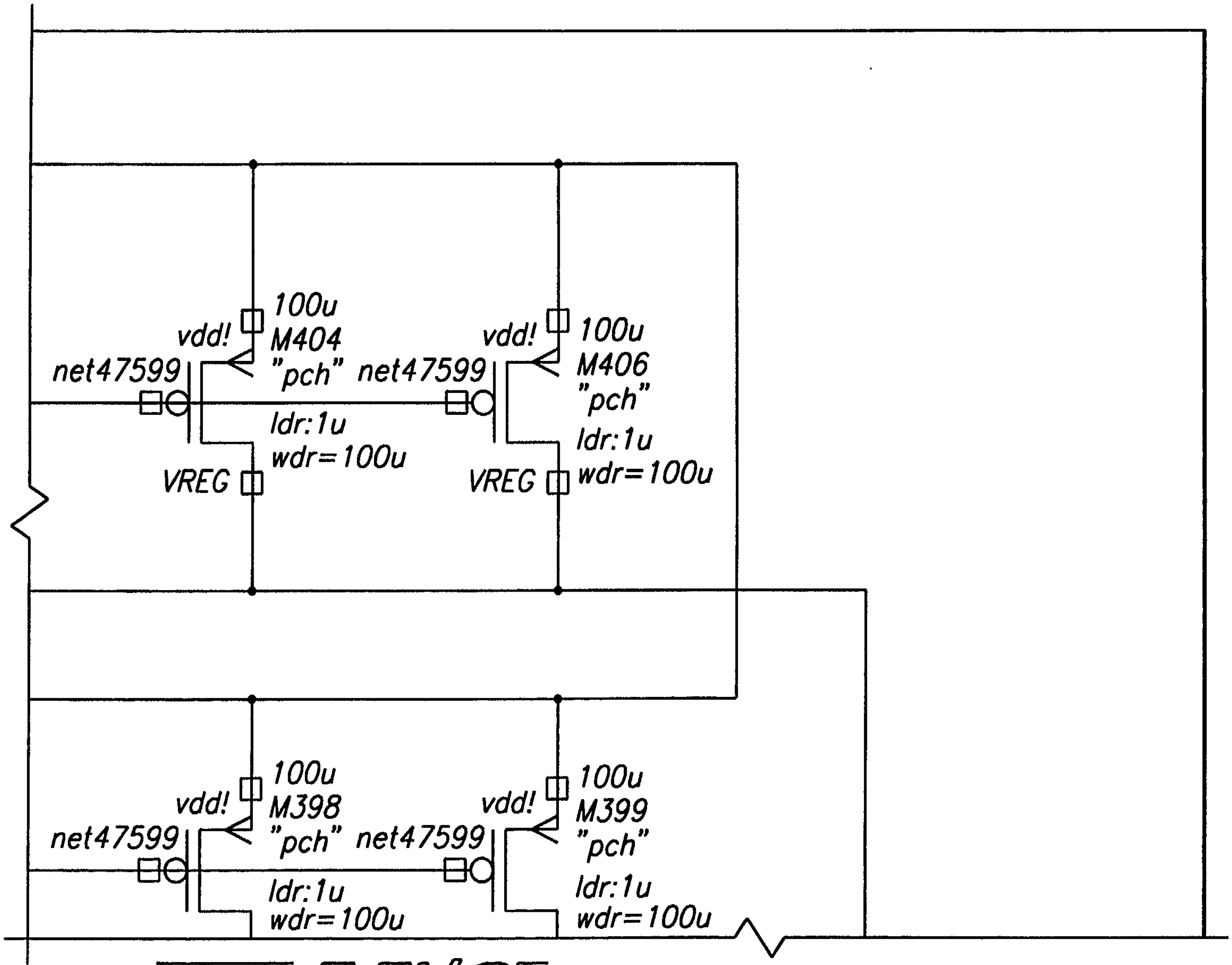

100u
M404
"pch"
vdd!
net47599
ldr:1u
wdr=100u
VREG
100u
M406
"pch"
vdd!
net47599
ldr:1u
wdr=100u
VREG
100u
M398
"pch"
vdd!
net47599
ldr:1u
wdr=100u
100u
M399
"pch"
vdd!
net47599
ldr:1u
wdr=100u

Fig 9.04AE

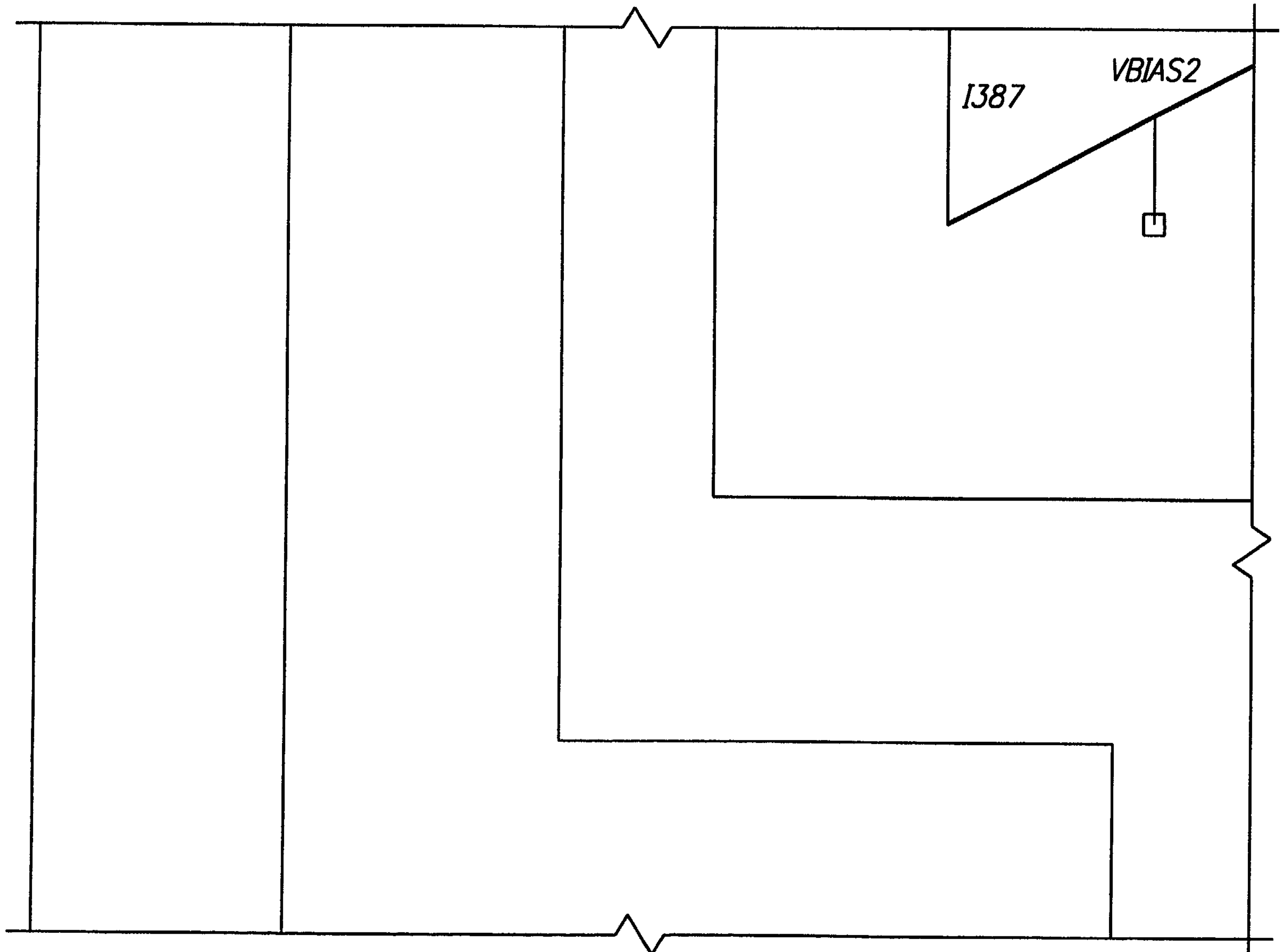


FIG. 9.04BA

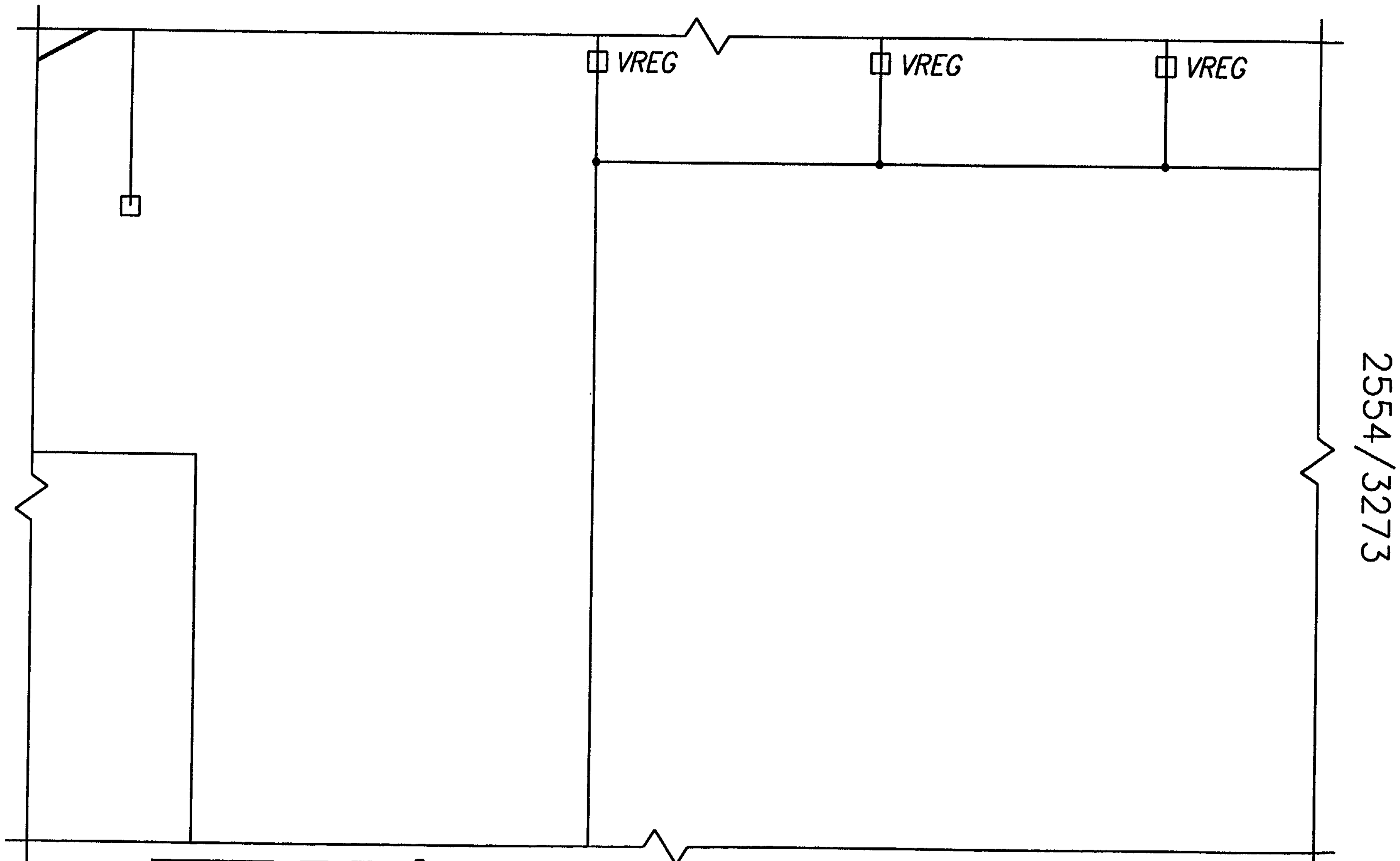


FIG 9.04BB

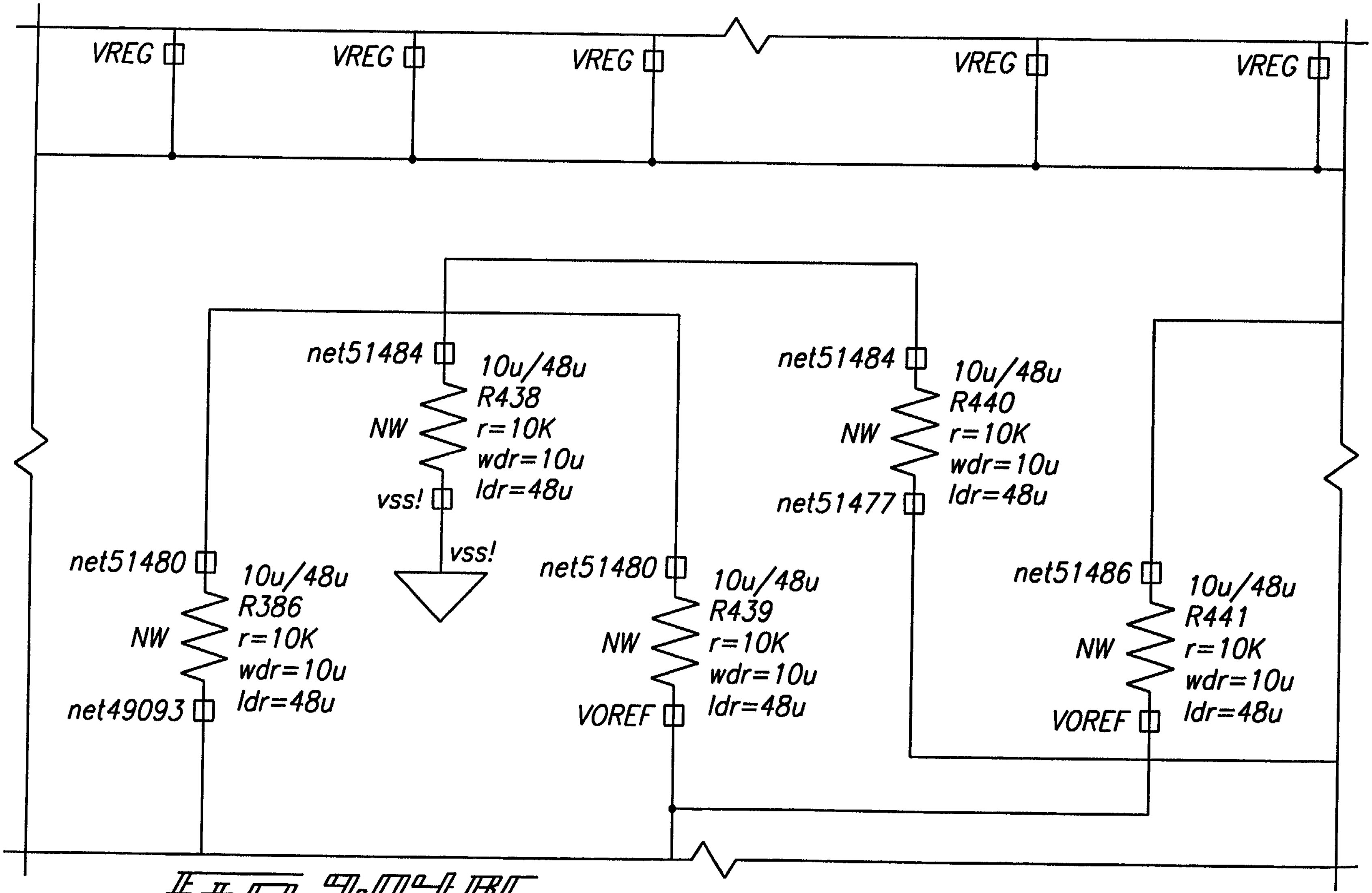

VREG
VREG
VREG
VREG
VREG
net51484
10u/48u
R438
NW
r=10K
wdr=10u
vss!
ldr=48u
vss!
net51484
10u/48u
R440
NW
r=10K
wdr=10u
net51477
ldr=48u
net51480
10u/48u
R386
NW
r=10K
wdr=10u
net49093
ldr=48u
net51480
10u/48u
R439
NW
r=10K
wdr=10u
VOREF
ldr=48u
net51486
10u/48u
R441
NW
r=10K
wdr=10u
VOREF
ldr=48u

Fig 9.04BC

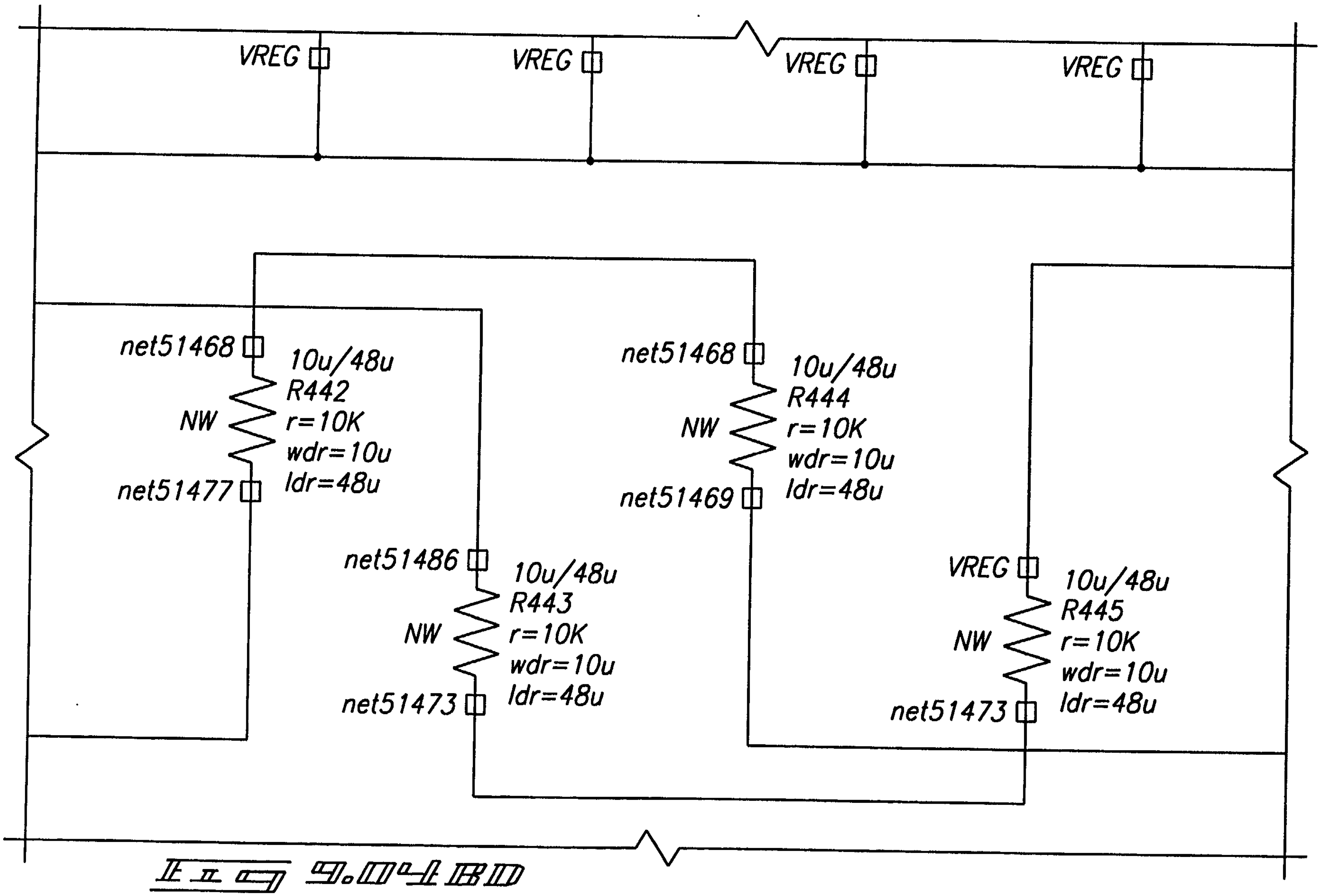

VREG
VREG
VREG
VREG
net51468
10u/48u
R442
NW
r=10K
wdr=10u
ldr=48u
net51477
net51468
10u/48u
R444
NW
r=10K
wdr=10u
ldr=48u
net51469
net51486
10u/48u
R443
NW
r=10K
wdr=10u
ldr=48u
net51473
VREG
10u/48u
R445
NW
r=10K
wdr=10u
ldr=48u
net51473

Fig 9.04BD

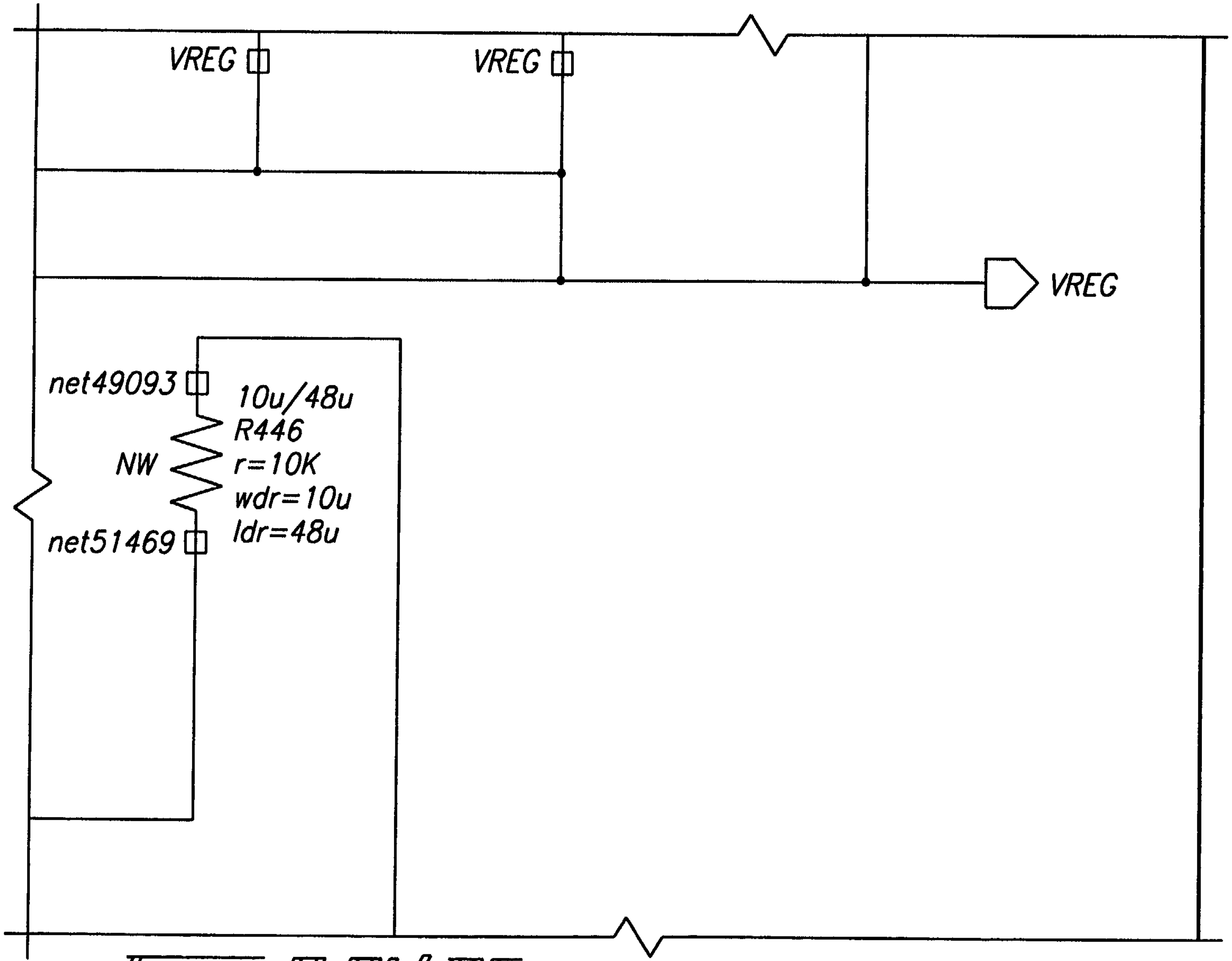
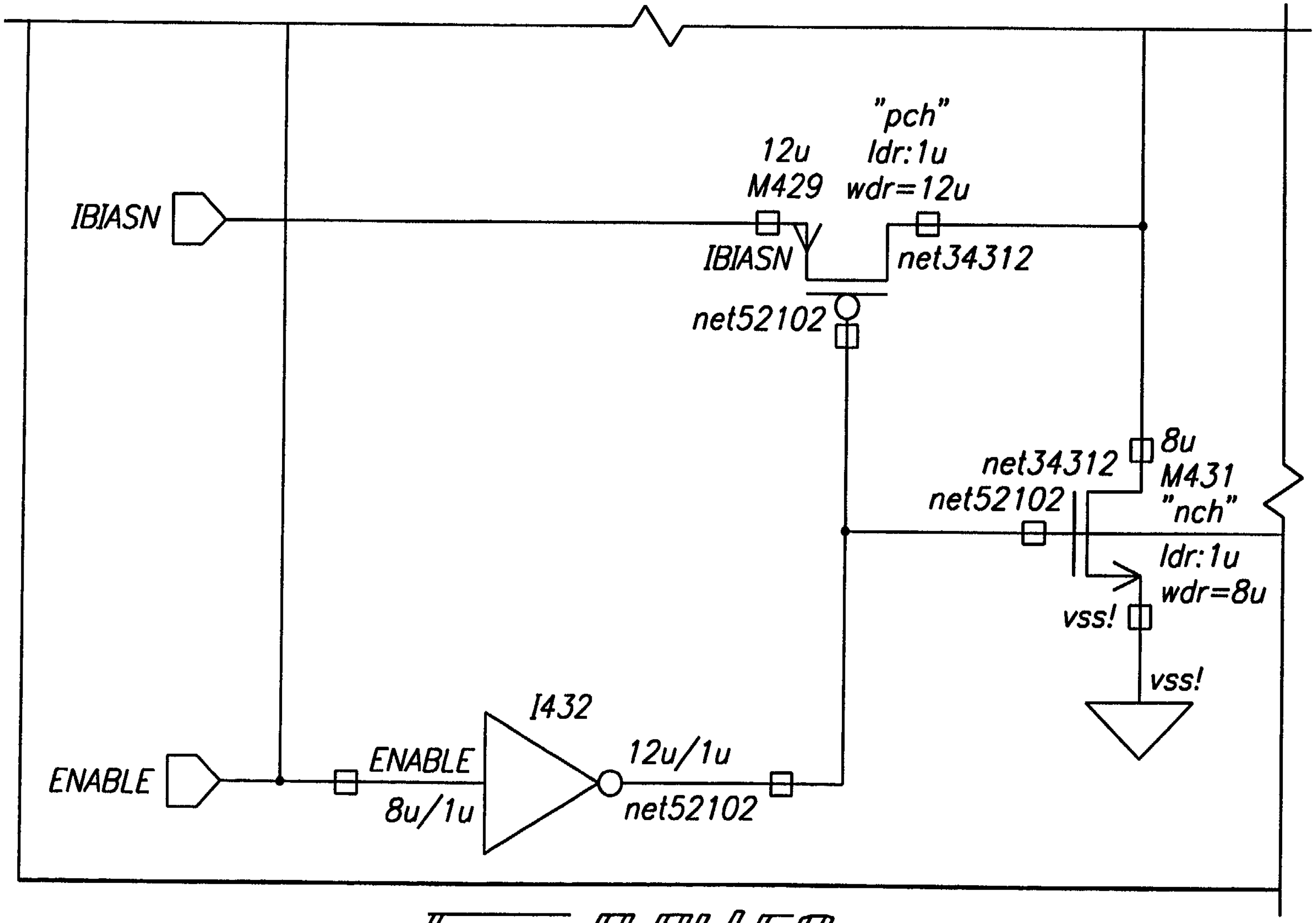

VREG
VREG
VREG
net49093
net51469
NW
10u/48u
R446
r=10K
wdr=10u
ldr=48u

Fig 9.04BE



IBIASN
12u
M429
"pch"
ldr:1u
wdr=12u
IBIASN
net34312
net52102
8u
M431
"nch"
net34312
net52102
ldr:1u
wdr=8u
vss!
vss!
ENABLE
ENABLE
8u/1u
I432
12u/1u
net52102

Fig 9.04CA

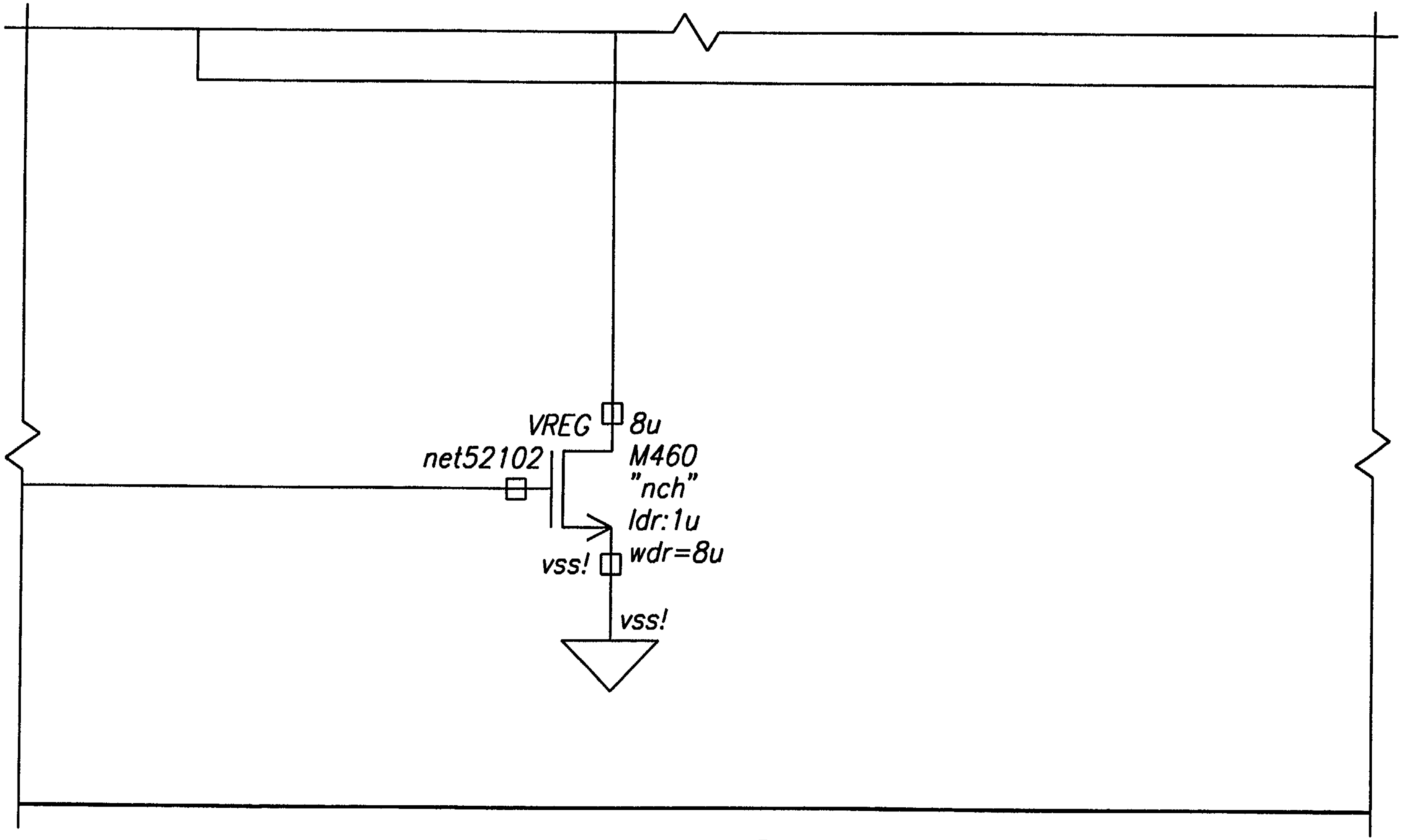


Fig 9.04CB

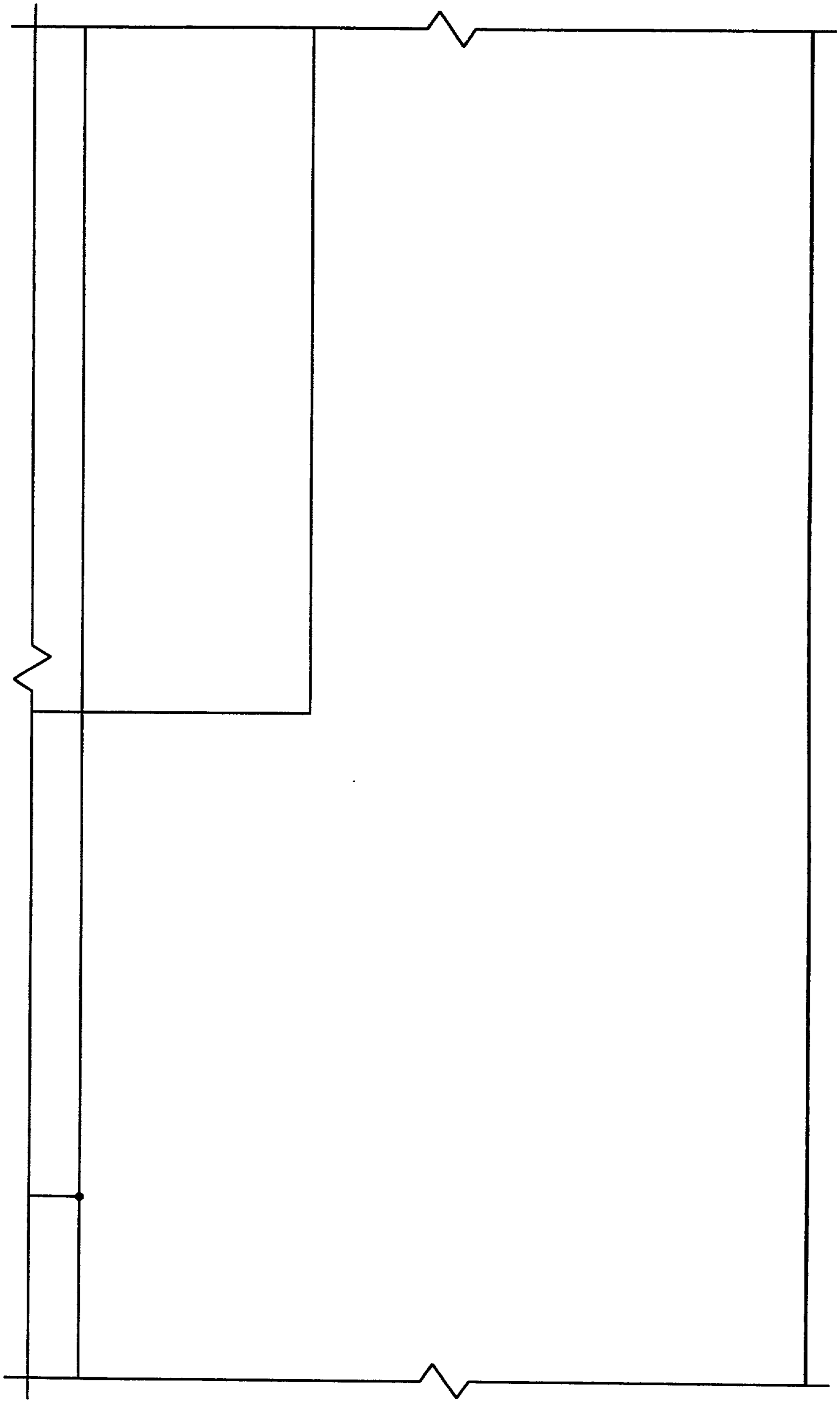


FIG. 9.04LL

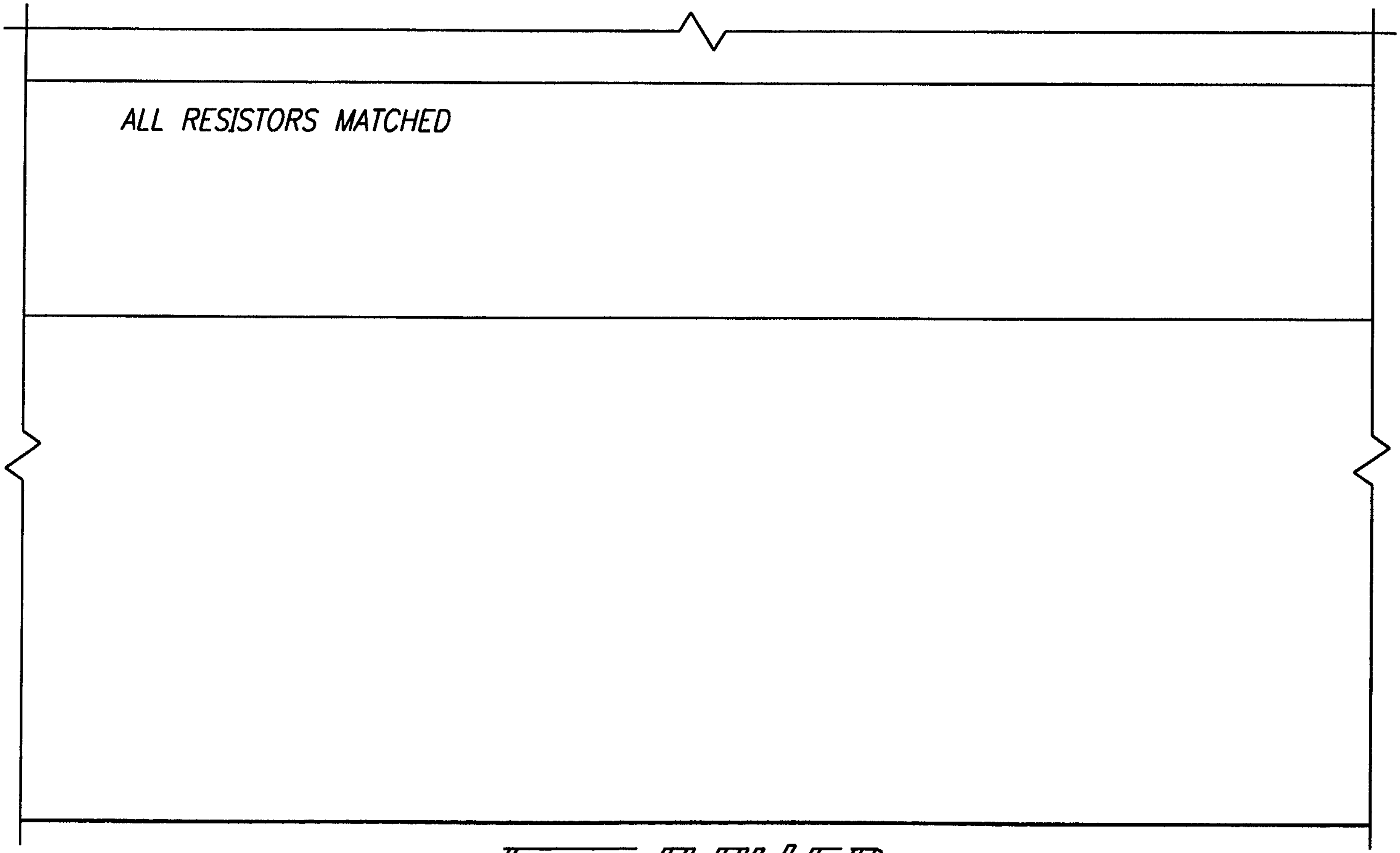


Fig 9.04CD

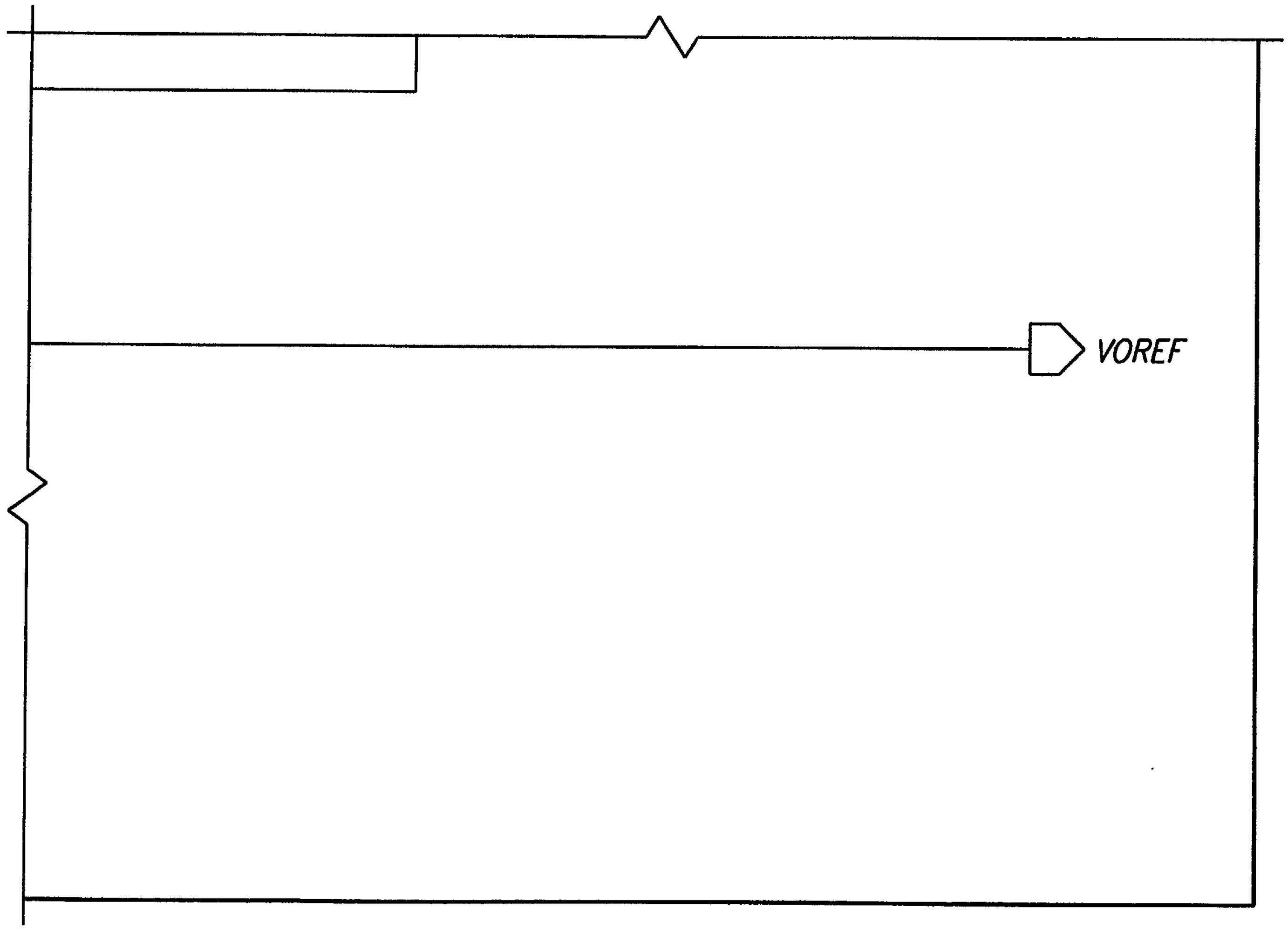


FIG 9.04CE

9.05AA	9.05AB	9.05AC	9.05AD	9.05AE
9.05BA	9.05BB	9.05BC	9.05BD	9.05BE
9.05CA	9.05CB	9.05CC	9.05CD	9.05CE
9.05DA	9.05DB	9.05DC	9.05DD	9.05DE
9.05EA	9.05EB	9.05EC	9.05ED	9.05EE
9.05FA	9.05FB	9.05FC	9.05FD	9.05FE

Fig 9.05

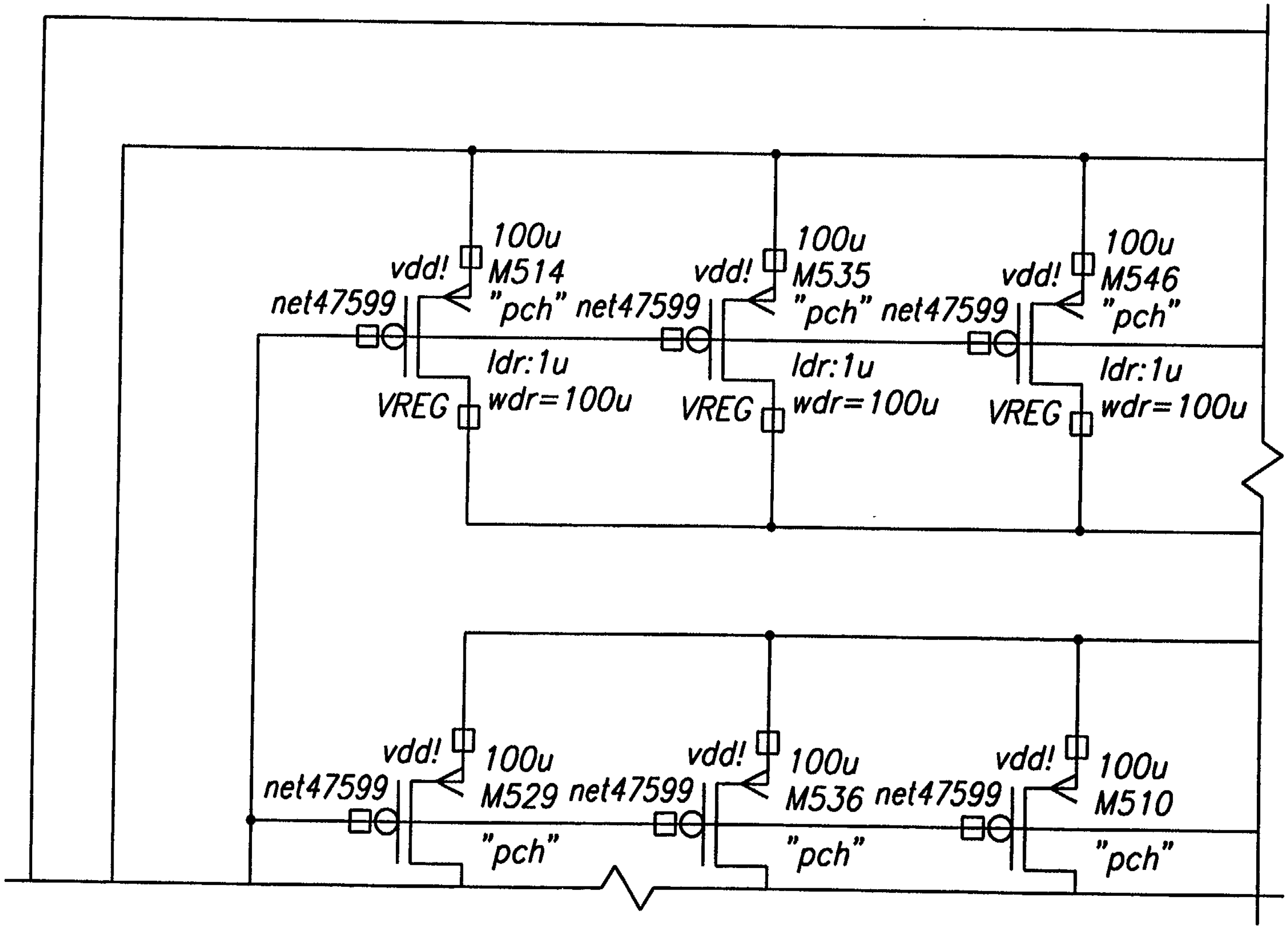

100u
M514
"pch"
vdd!
net47599
ldr:1u
wdr=100u
VREG
100u
M535
"pch"
vdd!
net47599
ldr:1u
wdr=100u
VREG
100u
M546
"pch"
vdd!
net47599
ldr:1u
wdr=100u
VREG
vdd!
net47599
100u
M529
"pch"
vdd!
net47599
100u
M536
"pch"
vdd!
net47599
100u
M510
"pch"

Fig 9.05AA

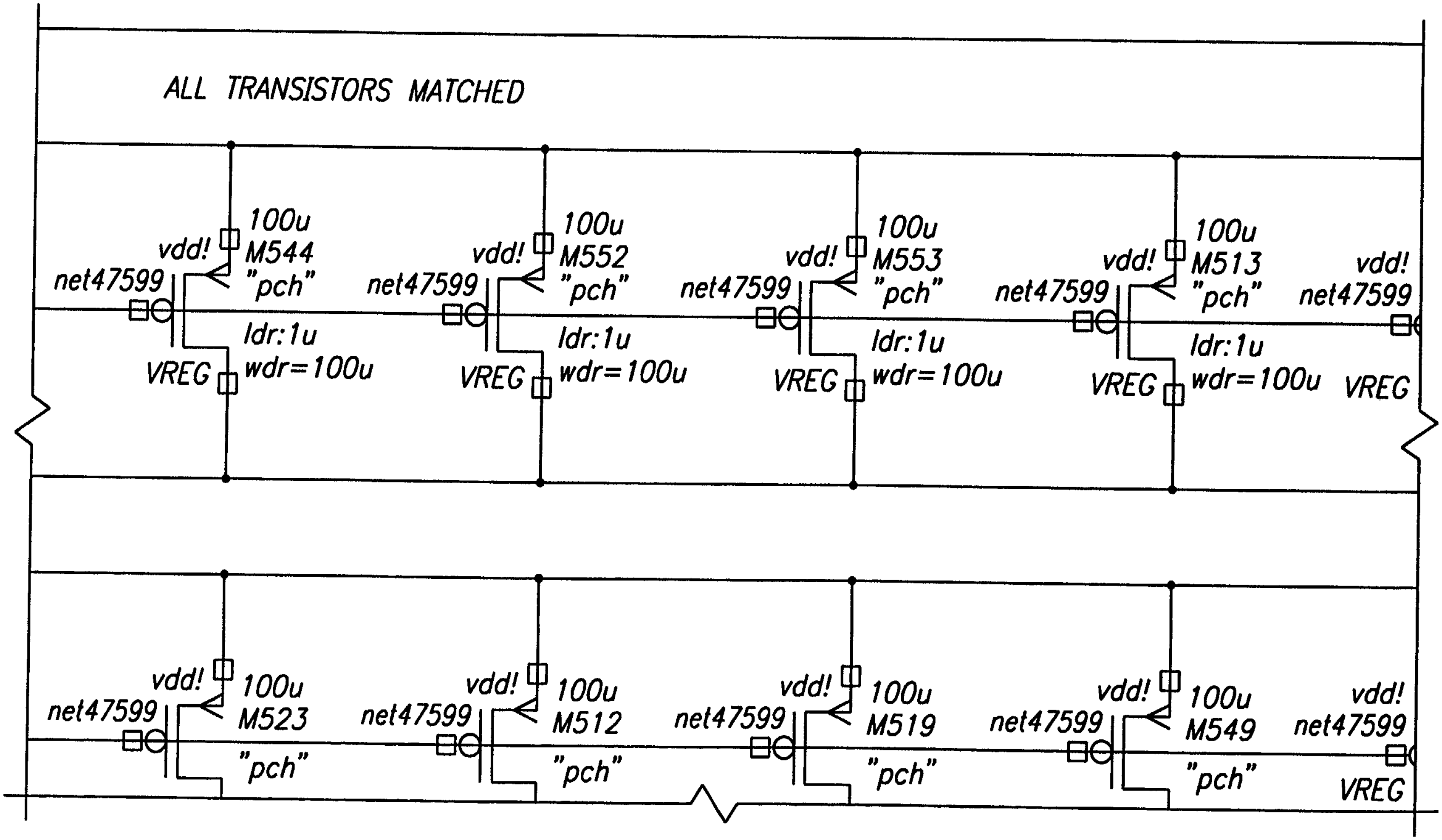

ALL TRANSISTORS MATCHED
vdd!
100u
M544
"pch"
net47599
ldr:1u
VREG
wdr=100u
vdd!
100u
M552
"pch"
net47599
ldr:1u
VREG
wdr=100u
vdd!
100u
M553
"pch"
net47599
ldr:1u
VREG
wdr=100u
vdd!
100u
M513
"pch"
net47599
ldr:1u
VREG
wdr=100u
vdd!
net47599
VREG
vdd!
100u
M523
net47599
"pch"
vdd!
100u
M512
net47599
"pch"
vdd!
100u
M519
net47599
"pch"
vdd!
100u
M549
net47599
"pch"
vdd!
net47599
VREG

FIG 9.05AB

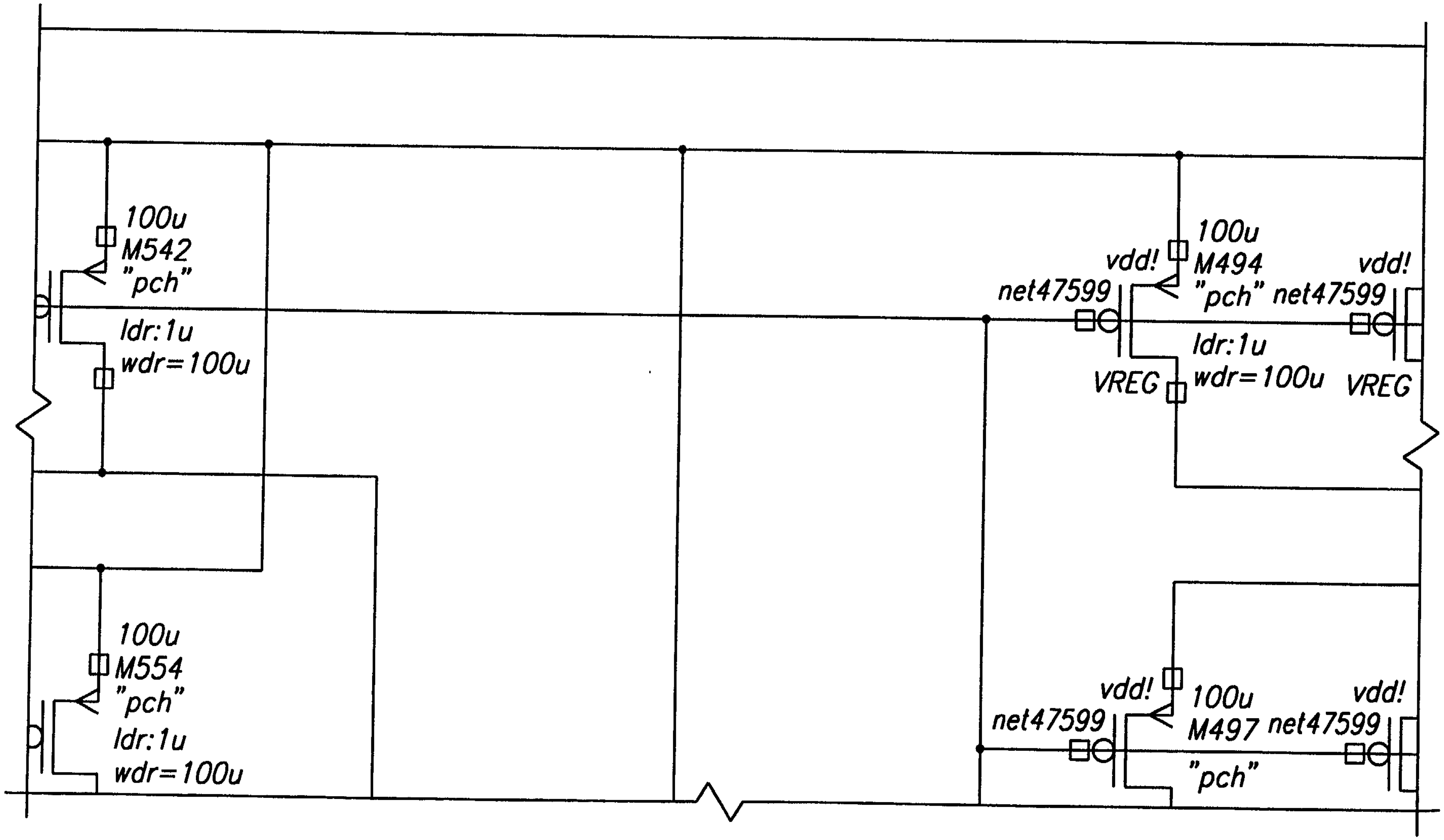

100u
M542
"pch"
ldr:1u
wdr=100u
100u
M554
"pch"
ldr:1u
wdr=100u
vdd!
100u
M494
"pch"
net47599
net47599
vdd!
ldr:1u
wdr=100u
VREG
VREG
vdd!
100u
M497
net47599
net47599
vdd!
"pch"

Fig 9.05AC

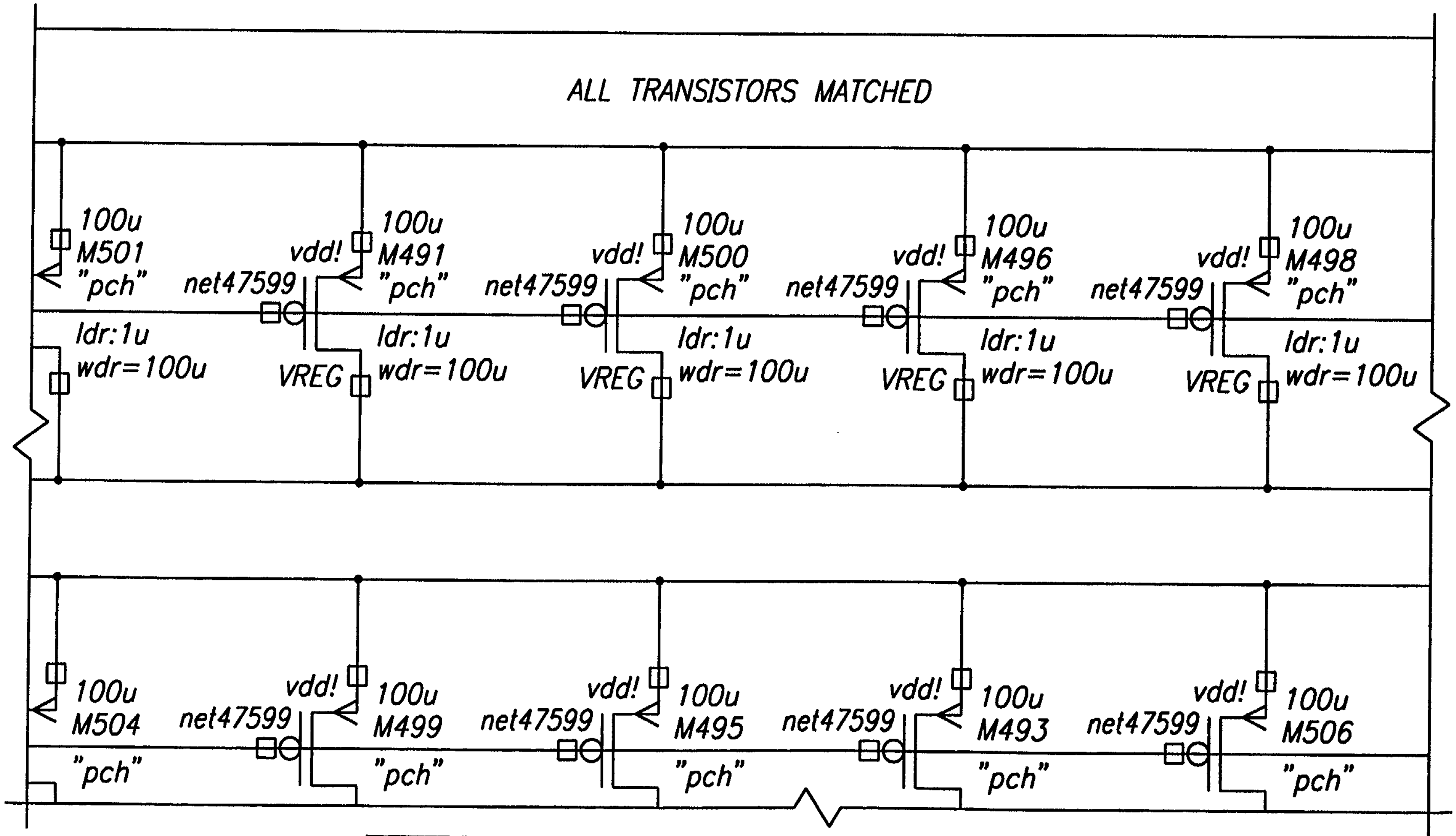
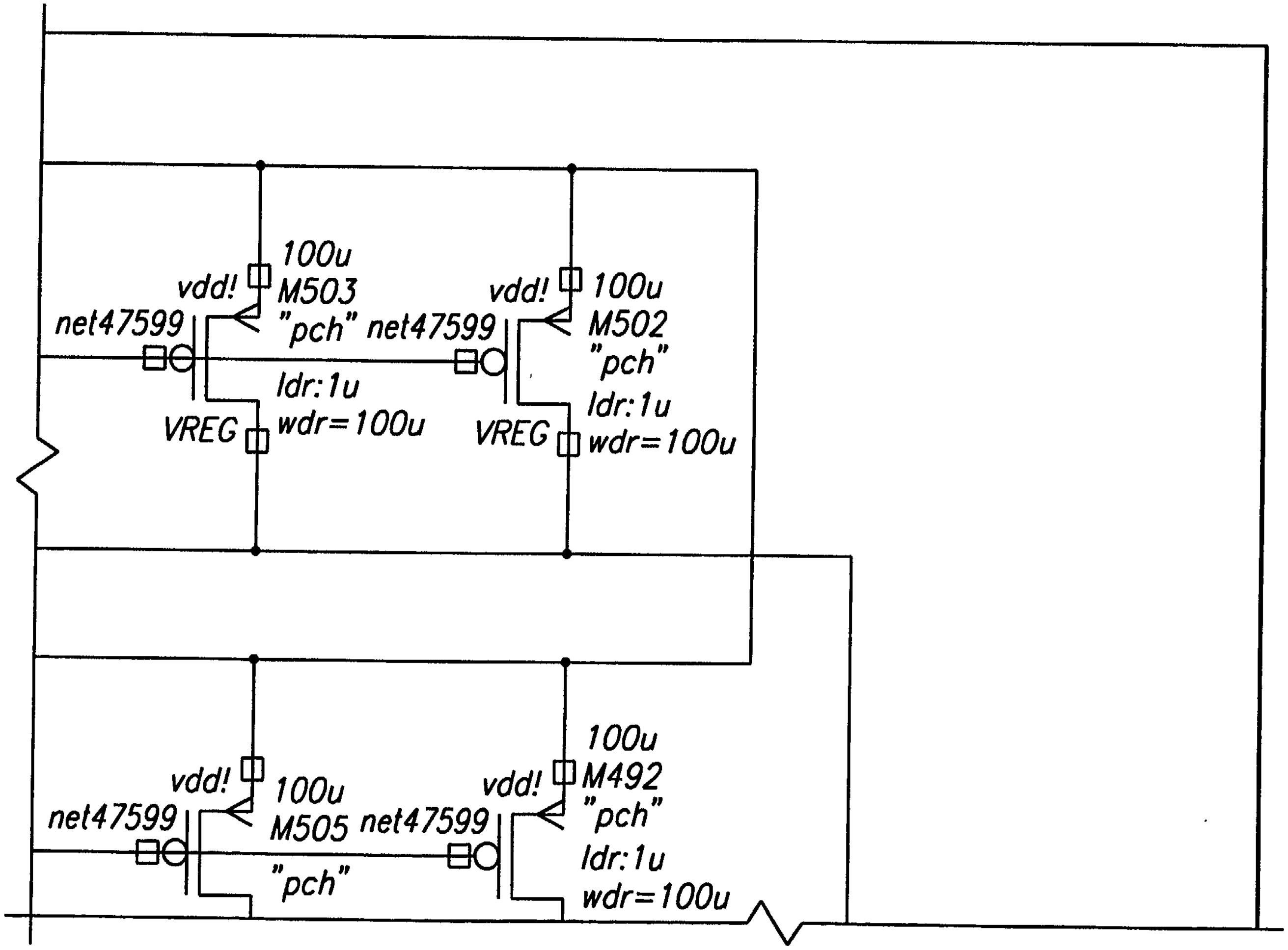

ALL TRANSISTORS MATCHED
100u
M501
"pch"
ldr:1u
wdr=100u
net47599
vdd!
100u
M491
"pch"
ldr:1u
wdr=100u
VREG
net47599
vdd!
100u
M500
"pch"
ldr:1u
wdr=100u
VREG
net47599
vdd!
100u
M496
"pch"
ldr:1u
wdr=100u
VREG
net47599
vdd!
100u
M498
"pch"
ldr:1u
wdr=100u
VREG
100u
M504
"pch"
net47599
vdd!
100u
M499
"pch"
net47599
vdd!
100u
M495
"pch"
net47599
vdd!
100u
M493
"pch"
net47599
vdd!
100u
M506
"pch"

Fig 9.05AD



100u
vdd!
M503
net47599
"pch"
ldr:1u
VREG
wdr=100u
vdd!
100u
M502
net47599
"pch"
ldr:1u
VREG
wdr=100u
vdd!
100u
net47599
M505
"pch"
100u
vdd!
M492
net47599
"pch"
ldr:1u
wdr=100u

FIG. 9.05AE

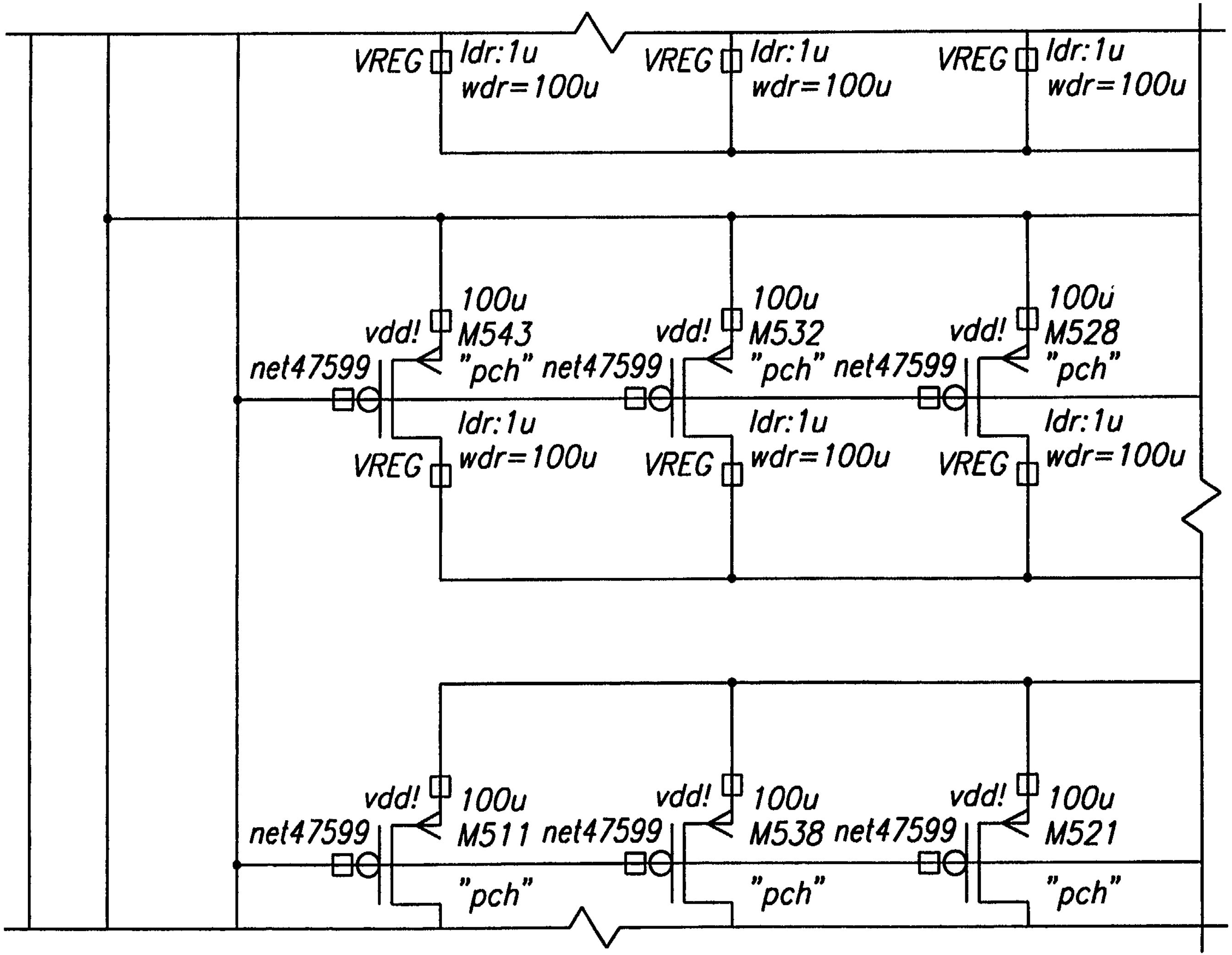

VREG
ldr:1u
wdr=100u
VREG
ldr:1u
wdr=100u
VREG
ldr:1u
wdr=100u
vdd!
100u
M543
"pch"
net47599
ldr:1u
wdr=100u
VREG
vdd!
100u
M532
"pch"
net47599
ldr:1u
wdr=100u
VREG
vdd!
100u
M528
"pch"
net47599
ldr:1u
wdr=100u
VREG
vdd!
100u
M511
net47599
"pch"
vdd!
100u
M538
net47599
"pch"
vdd!
100u
M521
net47599
"pch"

FIG 9.05BA

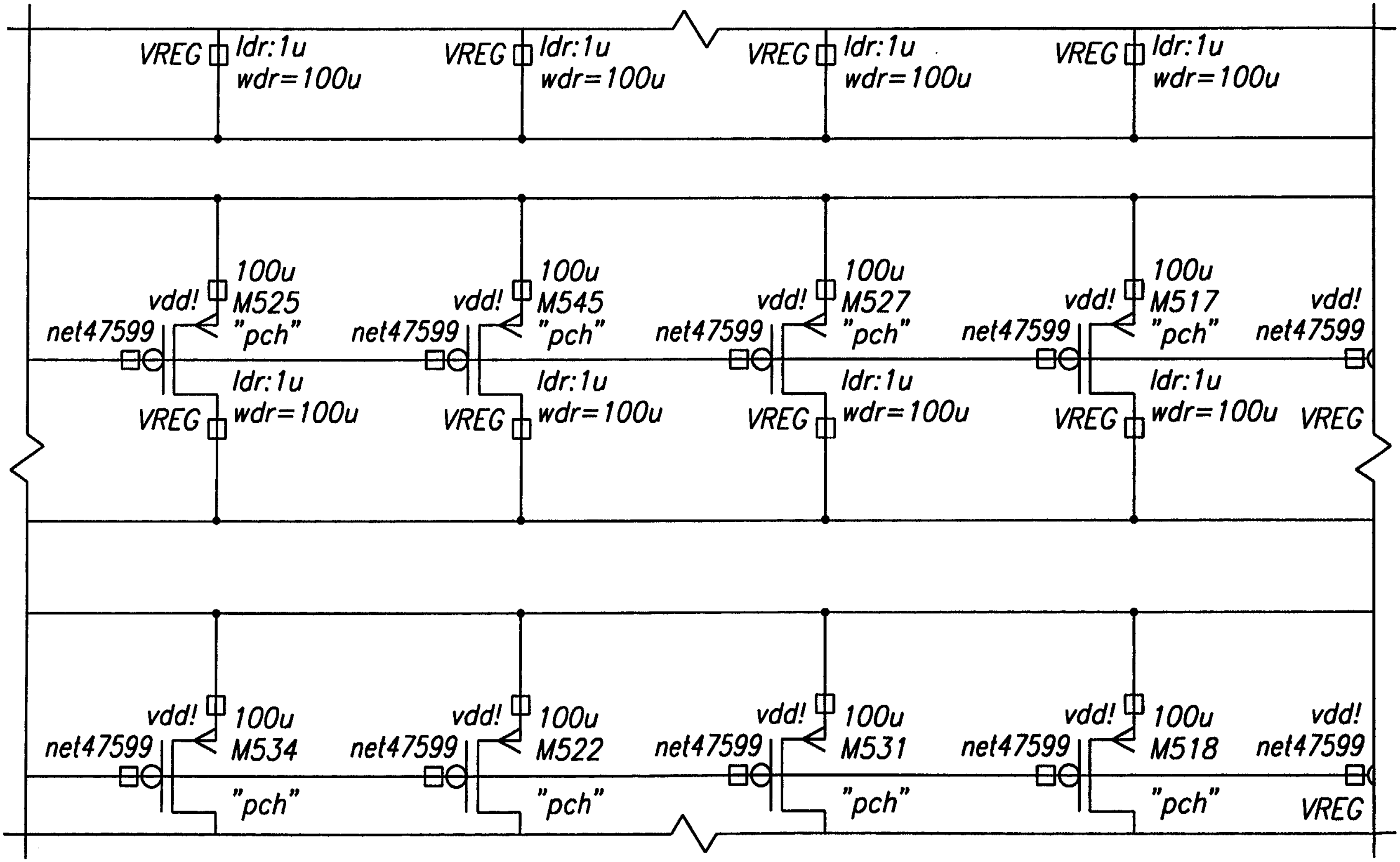

VREG
ldr:1u
wdr=100u
VREG
ldr:1u
wdr=100u
VREG
ldr:1u
wdr=100u
VREG
ldr:1u
wdr=100u
vdd!
100u
M525
"pch"
net47599
ldr:1u
wdr=100u
VREG
vdd!
100u
M545
"pch"
net47599
ldr:1u
wdr=100u
VREG
vdd!
100u
M527
"pch"
net47599
ldr:1u
wdr=100u
VREG
vdd!
100u
M517
"pch"
net47599
ldr:1u
wdr=100u
VREG
vdd!
net47599
VREG
vdd!
100u
M534
net47599
"pch"
vdd!
100u
M522
net47599
"pch"
vdd!
100u
M531
net47599
"pch"
vdd!
100u
M518
net47599
"pch"
vdd!
net47599
VREG

Fig 9.05BB

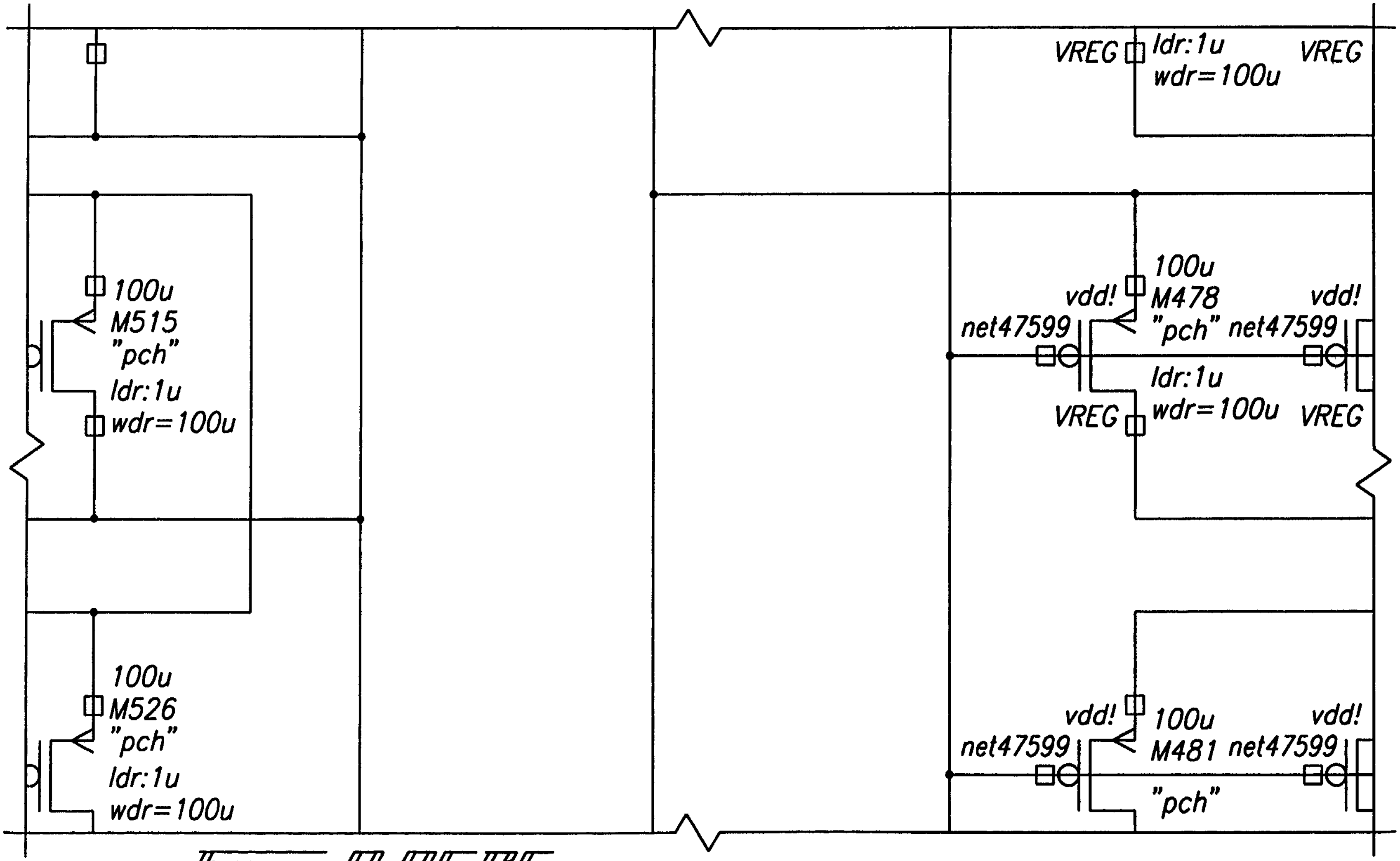

100u
M515
"pch"
ldr:1u
wdr=100u
100u
M526
"pch"
ldr:1u
wdr=100u
VREG
ldr:1u
wdr=100u
VREG
vdd!
100u
M478
"pch"
net47599
vdd!
net47599
ldr:1u
wdr=100u
VREG
VREG
vdd!
100u
M481
net47599
vdd!
net47599
"pch"

FIG 9.05BC

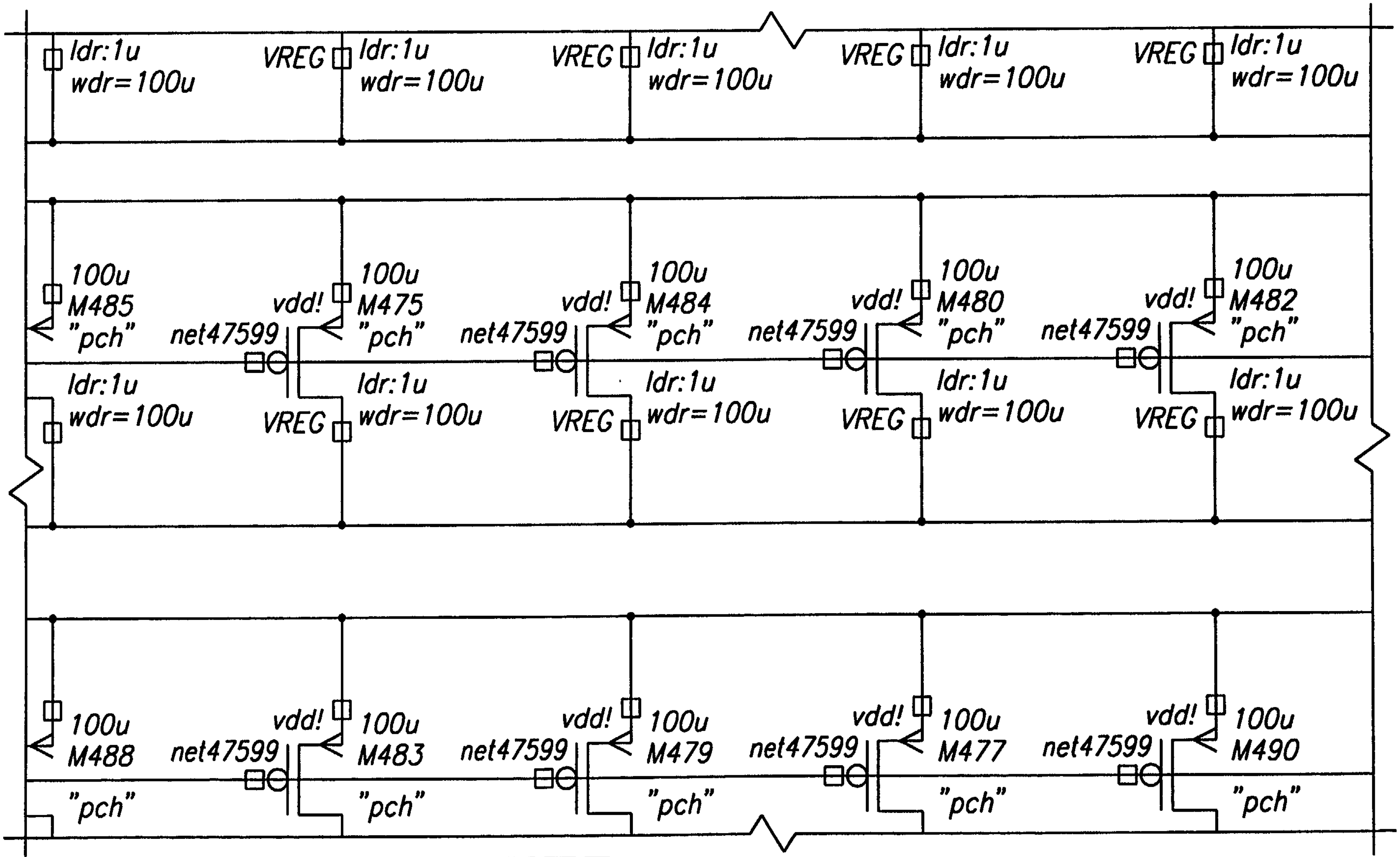

ldr:1u
wdr=100u
VREG
100u
M485
"pch"
M475
M484
M480
M482
vdd!
net47599
M488
M483
M479
M477
M490

FIG 9.05BD

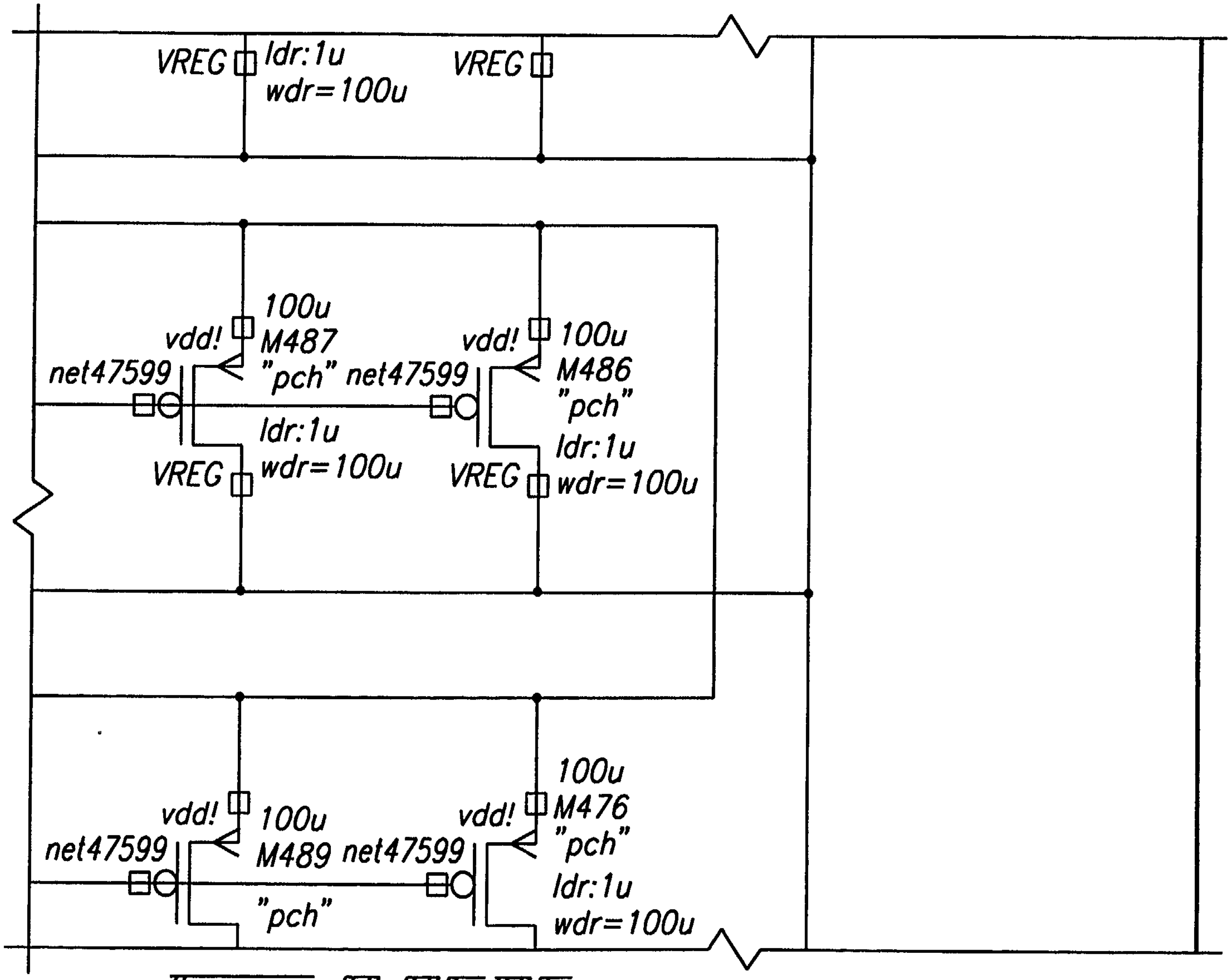

VREG
ldr:1u
wdr=100u
VREG
100u
vdd!
M487
net47599
"pch"
net47599
ldr:1u
wdr=100u
VREG
vdd!
100u
M486
"pch"
ldr:1u
VREG
wdr=100u
100u
vdd!
100u
M476
net47599
M489
net47599
"pch"
"pch"
ldr:1u
wdr=100u

FIG 9.05BE

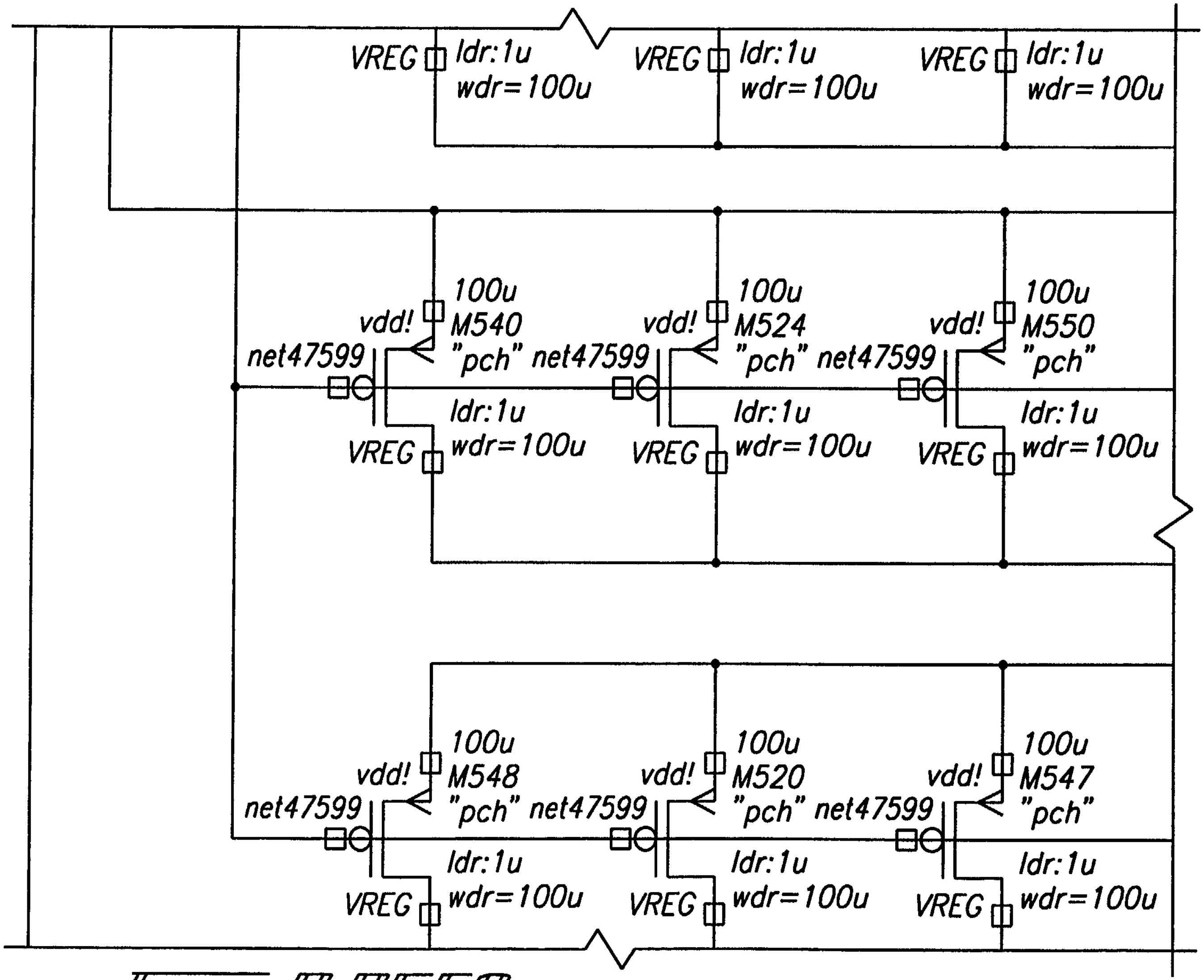

VREG
ldr:1u
wdr=100u
VREG
ldr:1u
wdr=100u
VREG
ldr:1u
wdr=100u
100u
M540
"pch"
vdd!
net47599
ldr:1u
wdr=100u
VREG
100u
M524
"pch"
vdd!
net47599
ldr:1u
wdr=100u
VREG
100u
M550
"pch"
vdd!
net47599
ldr:1u
wdr=100u
VREG
100u
M548
"pch"
vdd!
net47599
ldr:1u
wdr=100u
VREG
100u
M520
"pch"
vdd!
net47599
ldr:1u
wdr=100u
VREG
100u
M547
"pch"
vdd!
net47599
ldr:1u
wdr=100u
VREG

Fig 9.0SCA

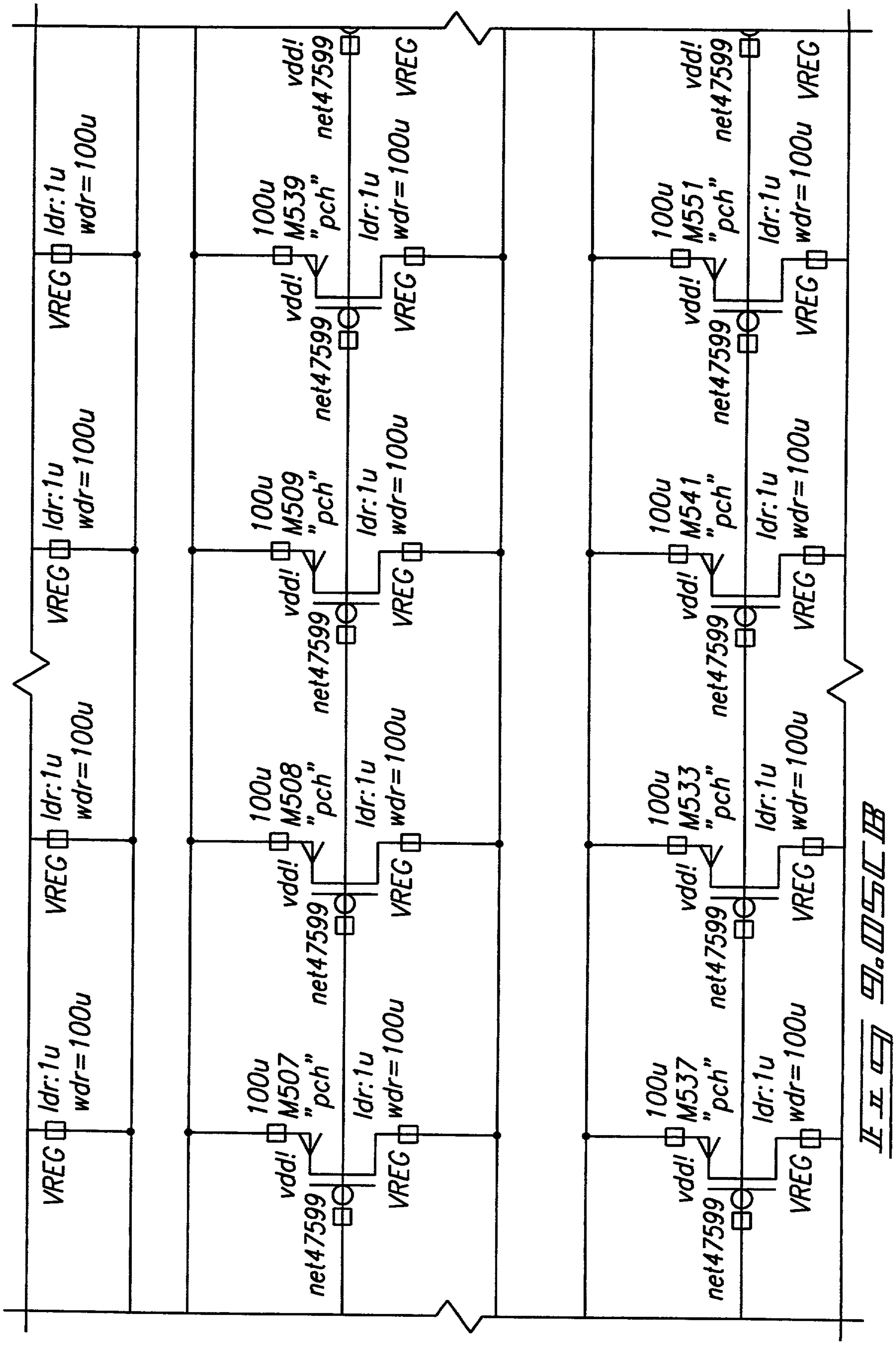

VREG
ldr:1u
wdr=100u
vdd!
net47599
100u
M539
"pch"
M509
M508
M507
M551
M541
M533
M537

FIG 9.05CB

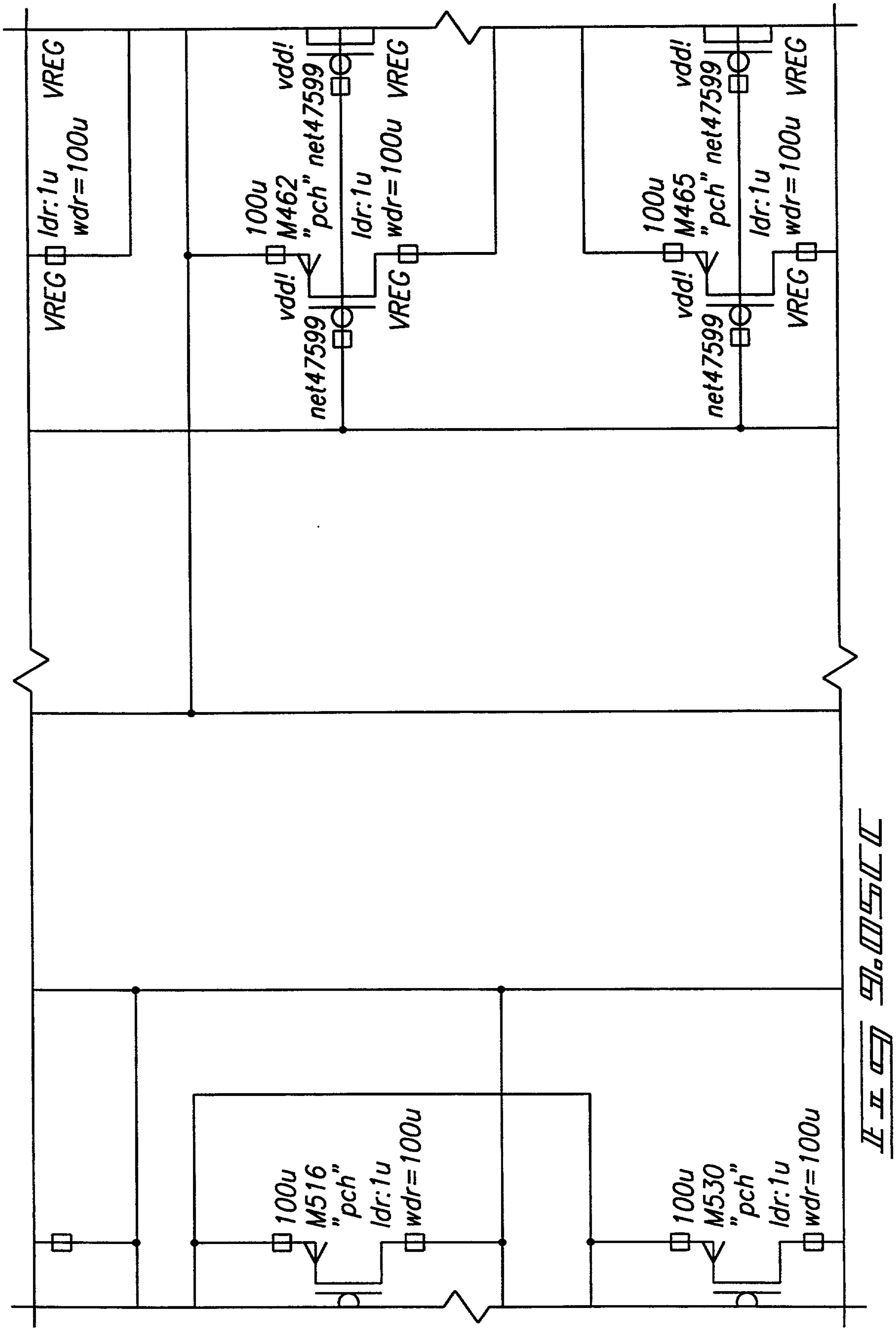

VREG
ldr:1u
wdr=100u
VREG
100u
M462
"pch"
vdd!
net47599
ldr:1u
wdr=100u
VREG
vdd!
net47599
VREG
100u
M465
"pch"
vdd!
net47599
ldr:1u
wdr=100u
VREG
vdd!
net47599
VREG
100u
M516
"pch"
ldr:1u
wdr=100u
100u
M530
"pch"
ldr:1u
wdr=100u

FIG. 9.05CC

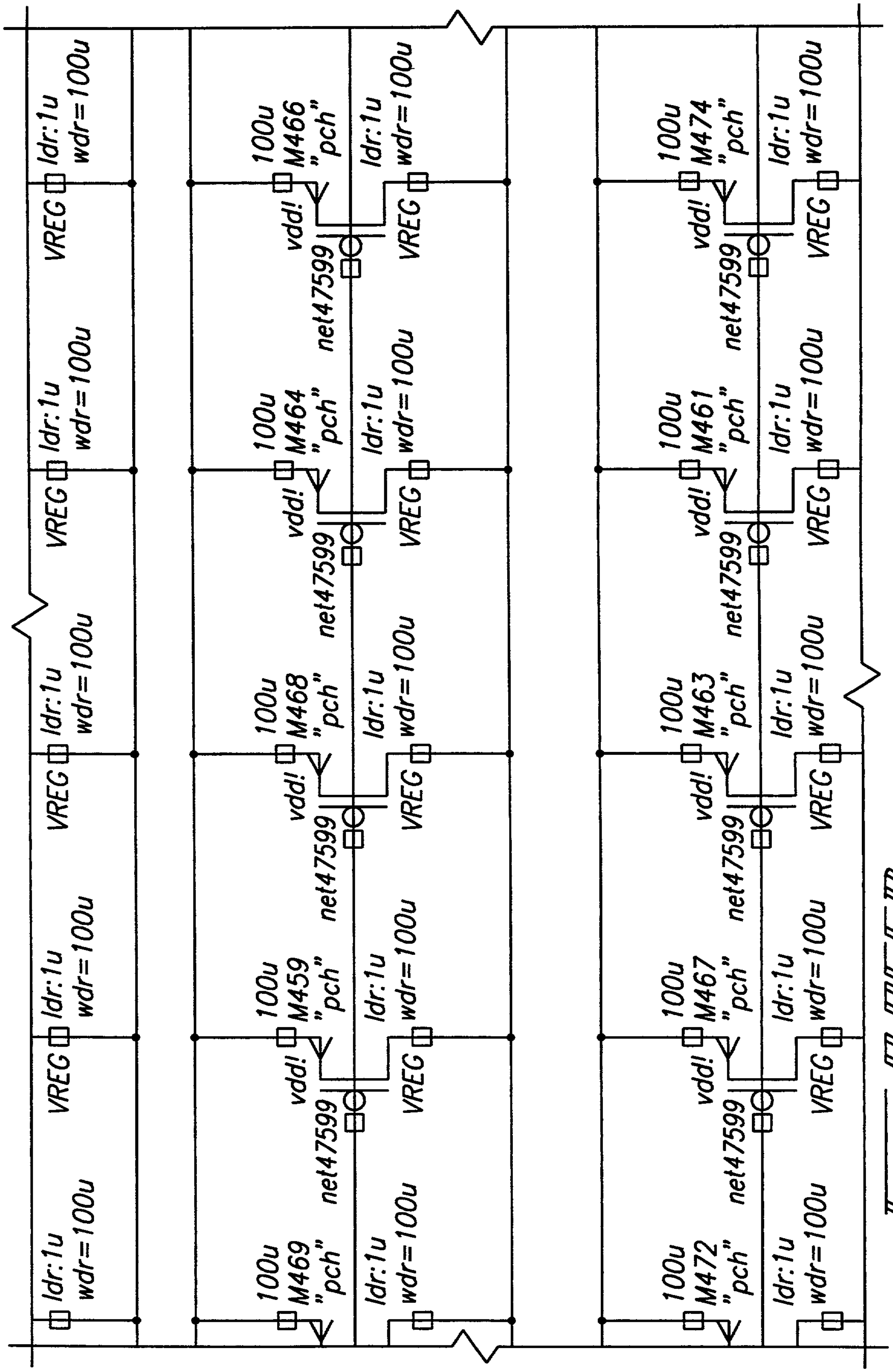

ldr:1u
wdr=100u
VREG
100u
M466
"pch"
vdd!
net47599
M464
M468
M459
M469
M474
M461
M463
M467
M472

FIG 9.05CD

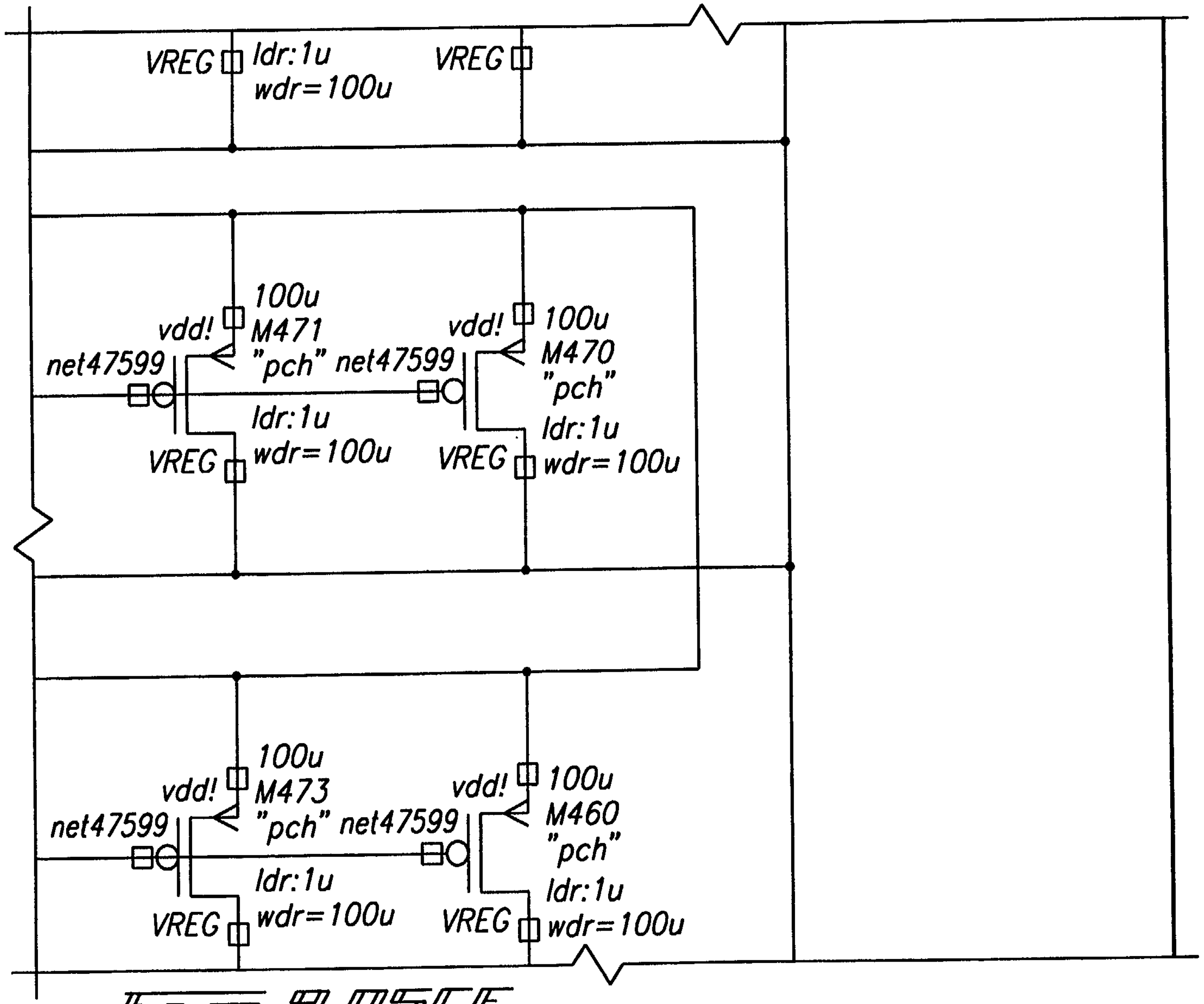

VREG
ldr:1u
wdr=100u
VREG
100u
vdd!
M471
net47599
"pch"
net47599
ldr:1u
VREG
wdr=100u
vdd!
100u
M470
"pch"
ldr:1u
VREG
wdr=100u
100u
vdd!
M473
net47599
"pch"
net47599
ldr:1u
VREG
wdr=100u
vdd!
100u
M460
"pch"
ldr:1u
VREG
wdr=100u

FIG 9.05CE

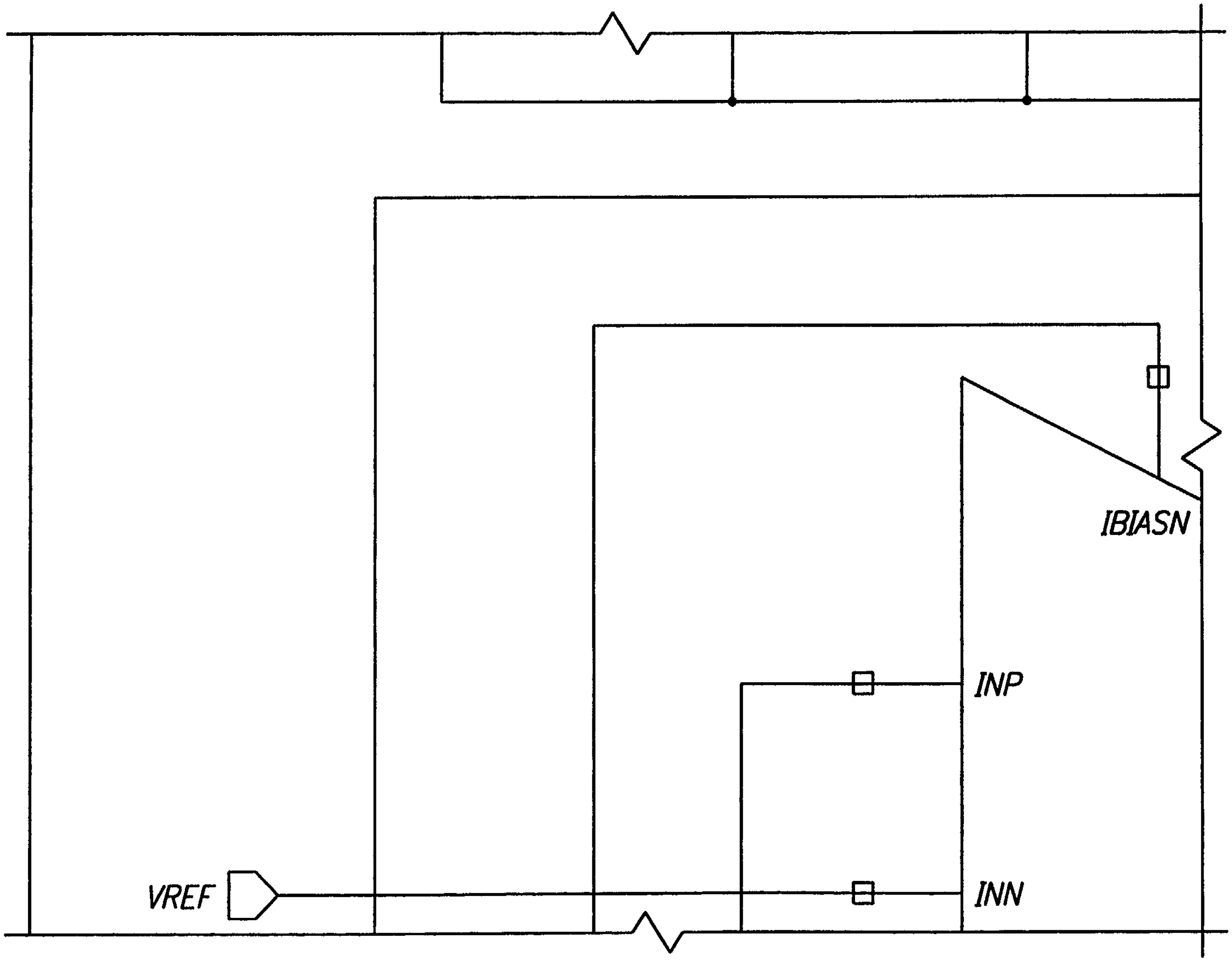


Fig 9.05DA

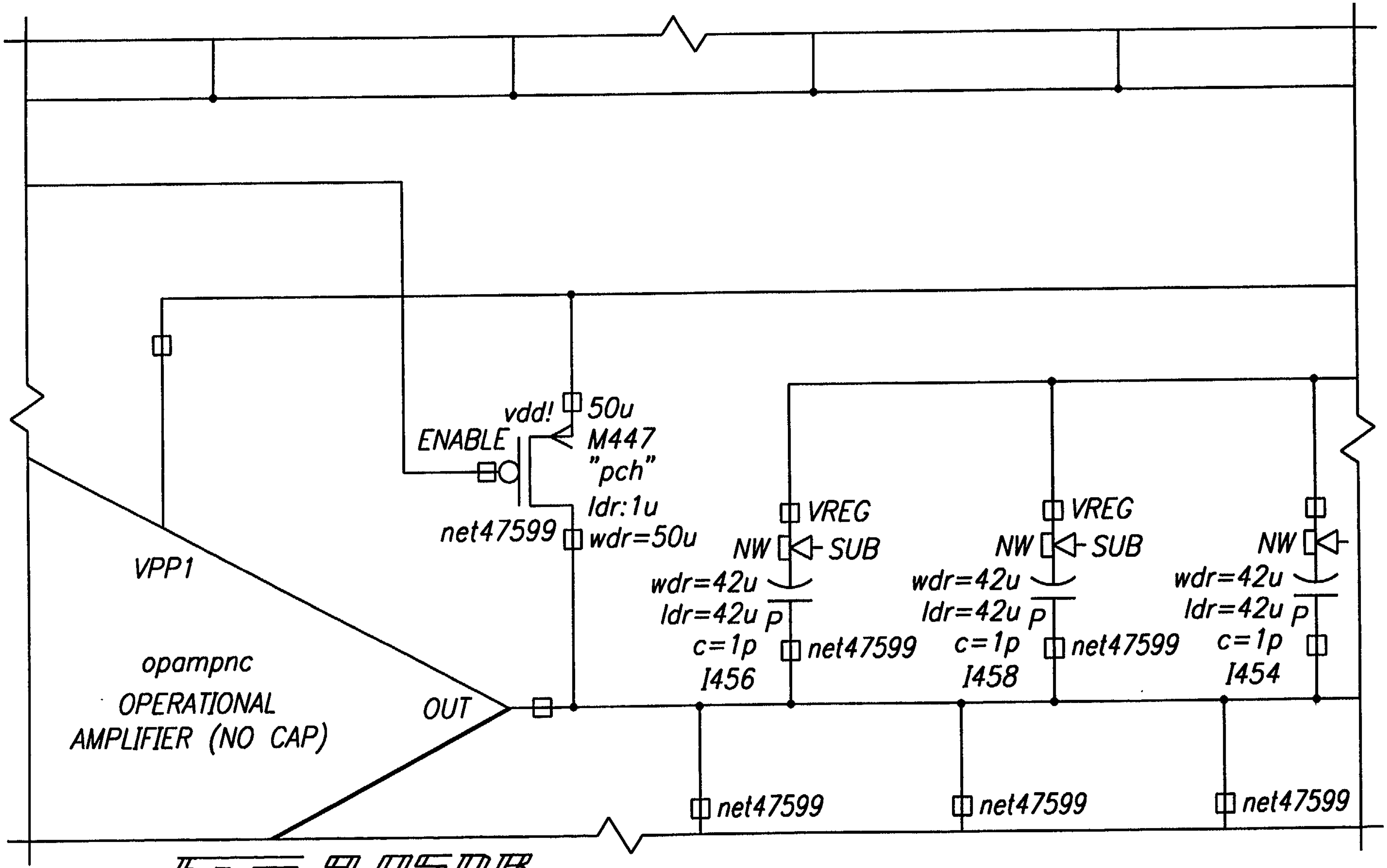

vdd!
50u
ENABLE
M447
"pch"
ldr:1u
net47599
wdr=50u
VPP1
opampnc
OPERATIONAL
AMPLIFIER (NO CAP)
OUT
VREG
NW
SUB
wdr=42u
ldr=42u
P
c=1p
net47599
I456
VREG
NW
SUB
wdr=42u
ldr=42u
P
c=1p
net47599
I458
NW
wdr=42u
ldr=42u
P
c=1p
I454
net47599
net47599
net47599

FIG 9.05DB

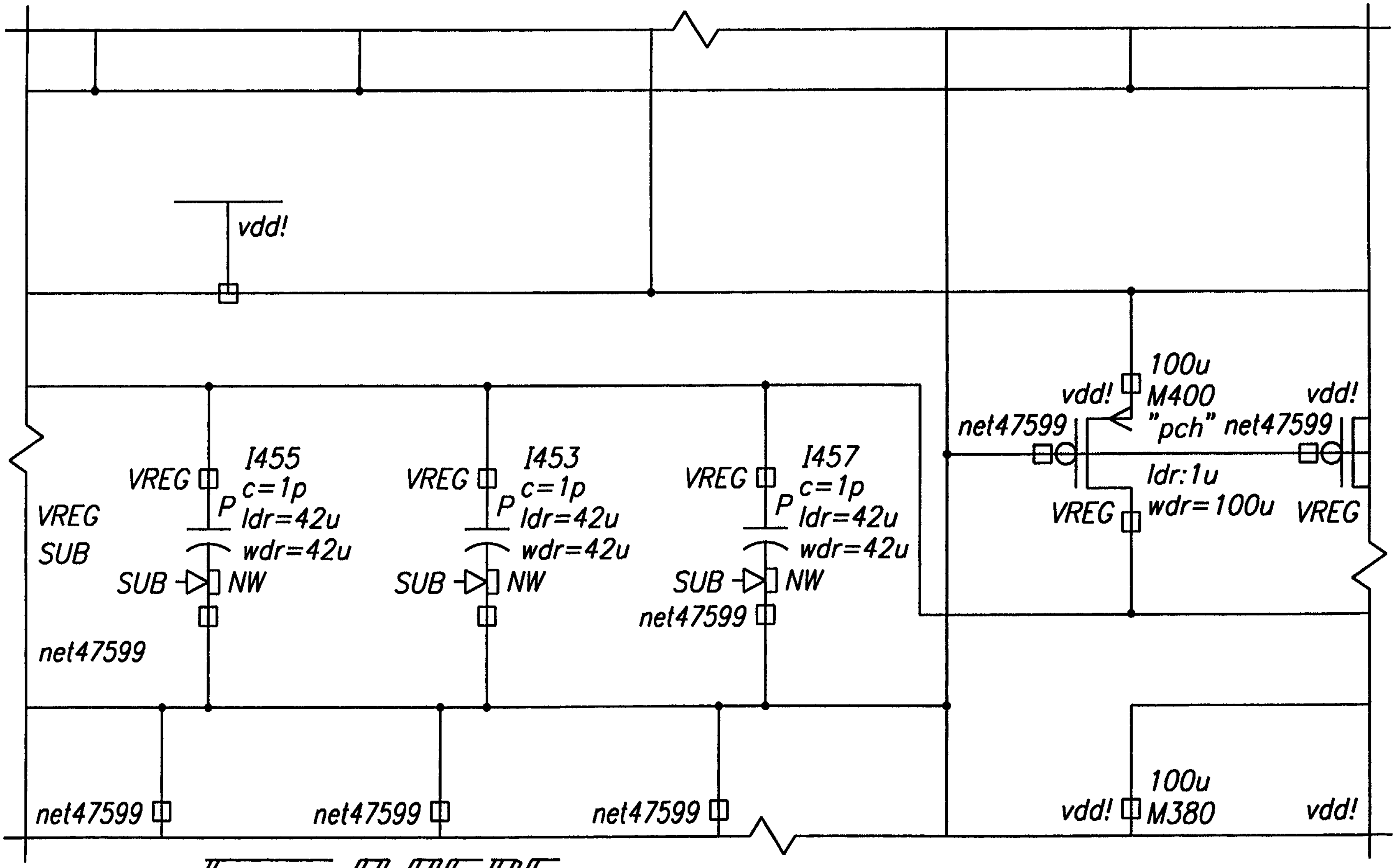

vdd!
VREG
SUB
net47599
VREG
I455
P
c=1p
ldr=42u
wdr=42u
SUB
NW
VREG
I453
P
c=1p
ldr=42u
wdr=42u
SUB
NW
VREG
I457
P
c=1p
ldr=42u
wdr=42u
SUB
NW
net47599
net47599
net47599
net47599
vdd!
net47599
100u
M400
"pch"
ldr:1u
wdr=100u
VREG
vdd!
net47599
VREG
100u
M380
vdd!
vdd!

FIG 9.05DC

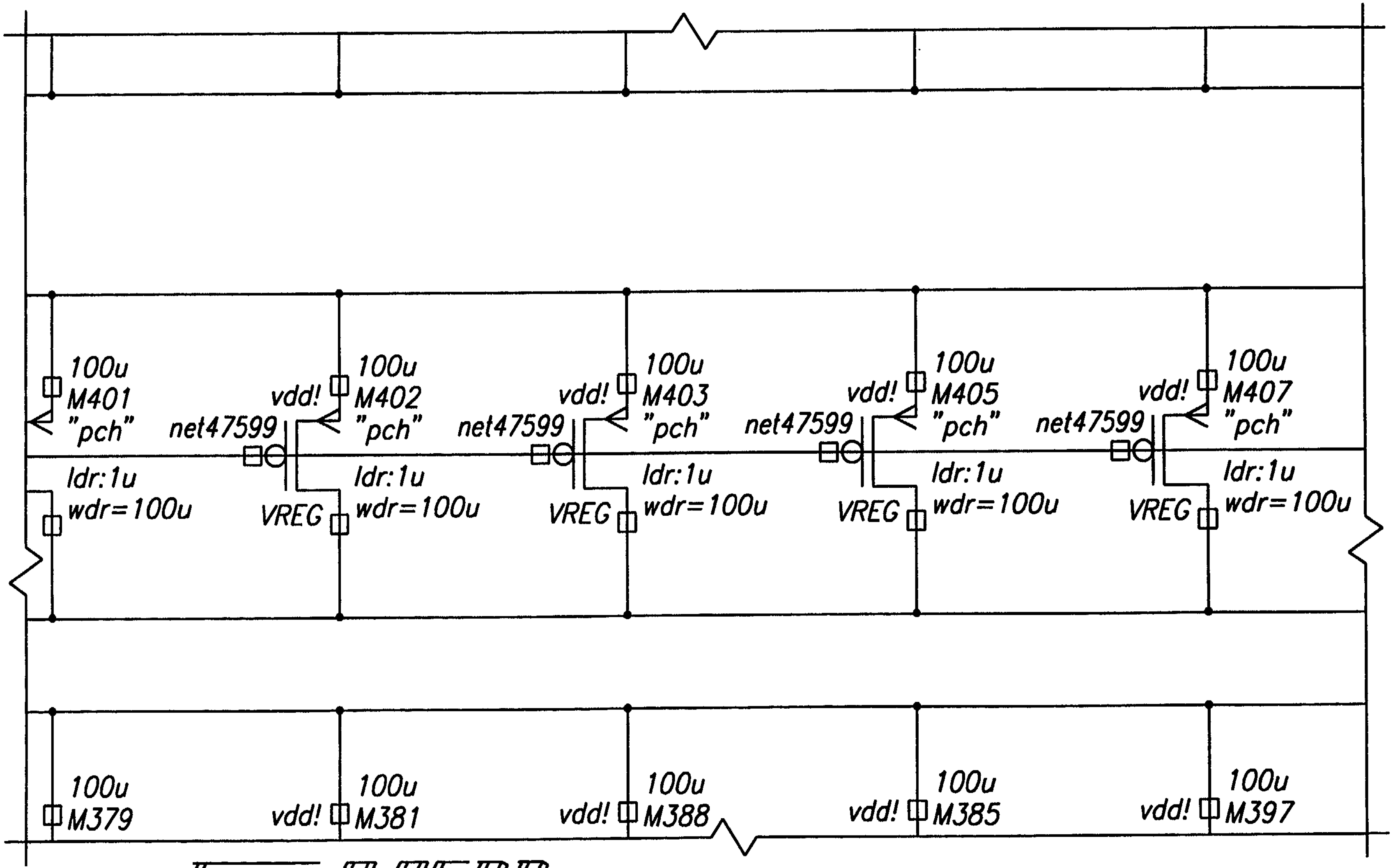

100u
M401
"pch"
ldr:1u
wdr=100u
vdd!
net47599
100u
M402
"pch"
VREG
ldr:1u
wdr=100u
vdd!
net47599
100u
M403
"pch"
VREG
ldr:1u
wdr=100u
vdd!
net47599
100u
M405
"pch"
VREG
ldr:1u
wdr=100u
vdd!
net47599
100u
M407
"pch"
VREG
ldr:1u
wdr=100u
100u
M379
vdd!
100u
M381
vdd!
100u
M388
vdd!
100u
M385
vdd!
100u
M397

FIG 9.05DD

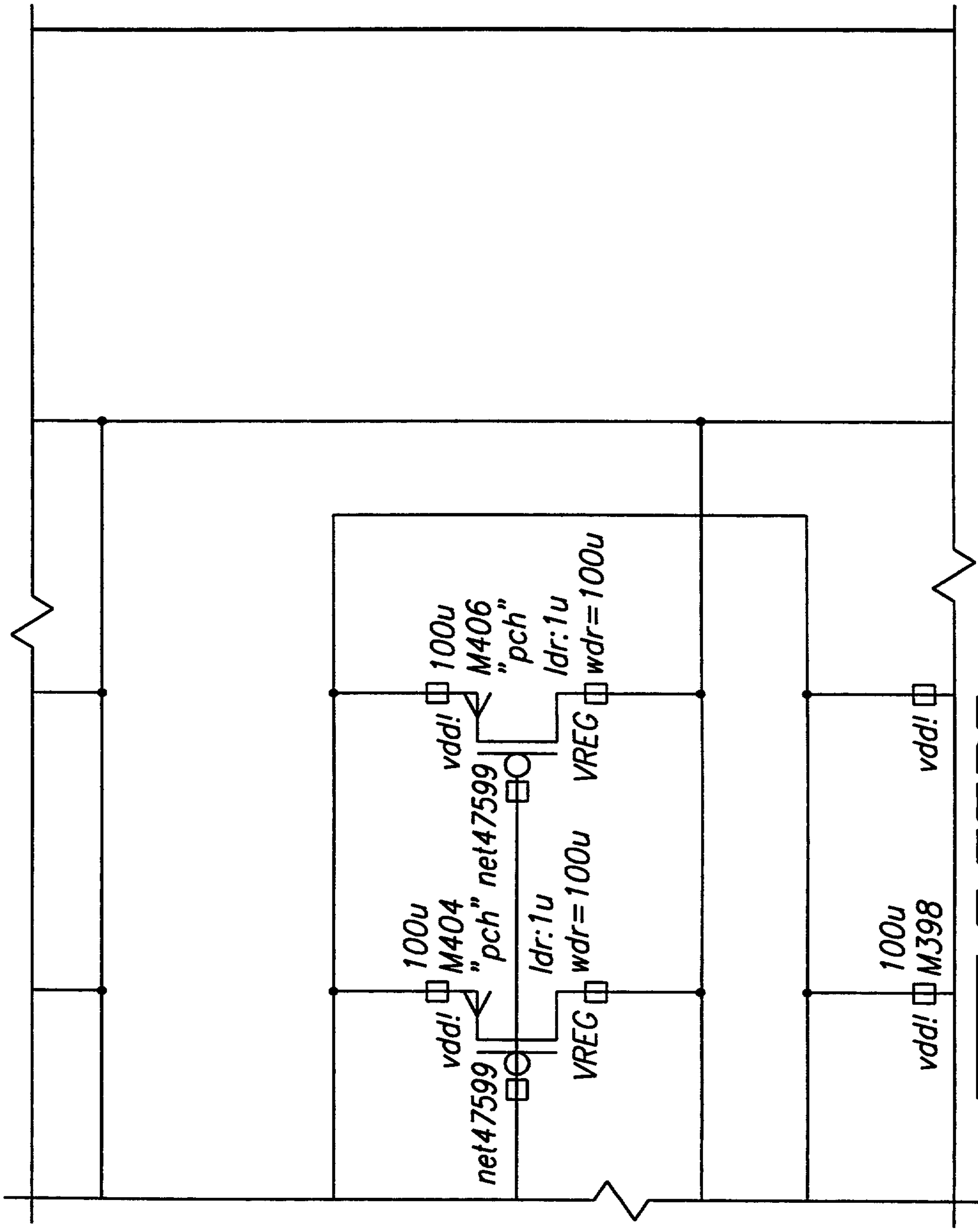

100u
M406
"pch"
ldr:1u
wdr=100u
vdd!
VREG
net47599
100u
M404
"pch"
ldr:1u
wdr=100u
vdd!
VREG
net47599
100u
M398
vdd!
vdd!

FIG 9.05DE

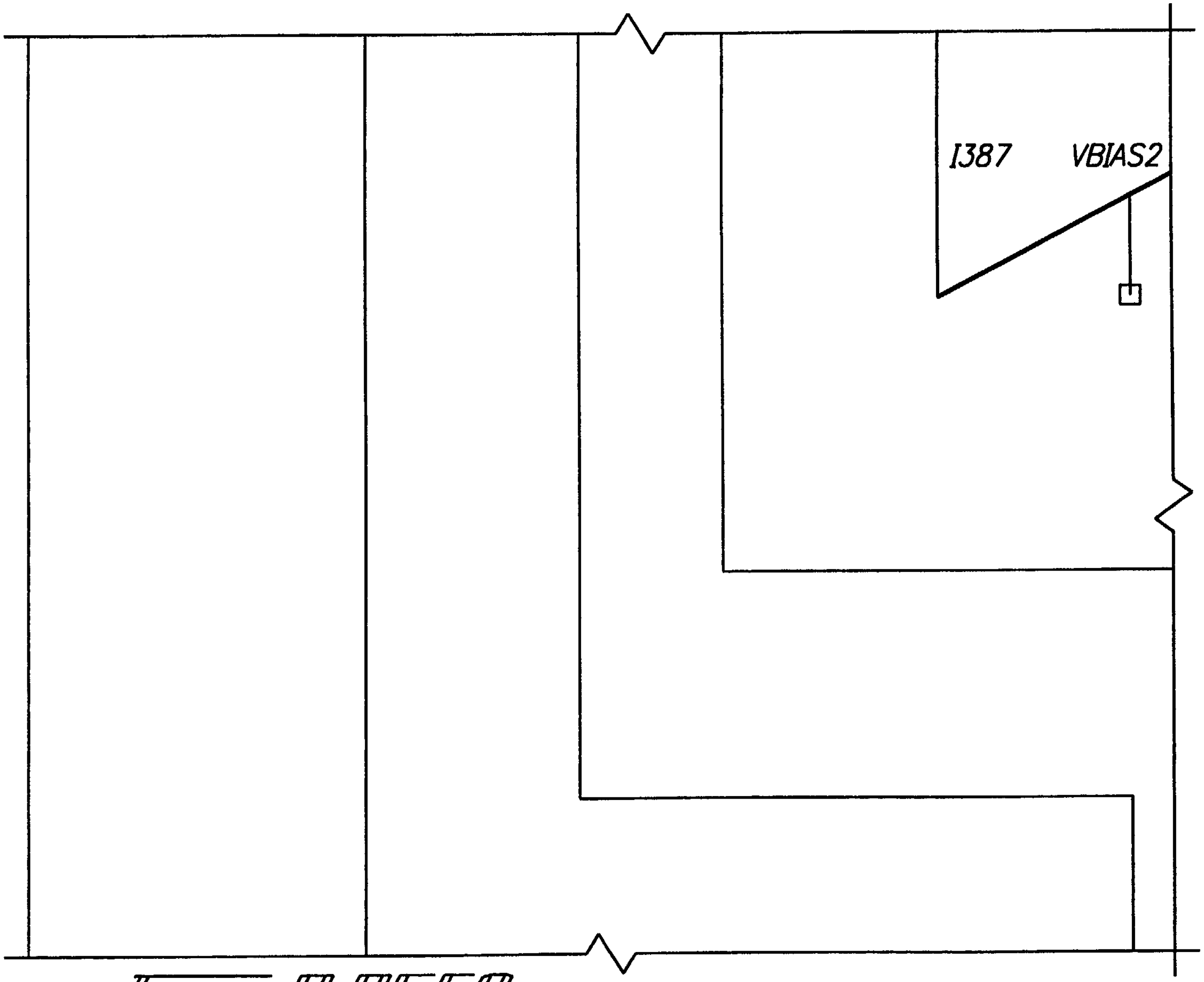


FIG 9.05EA

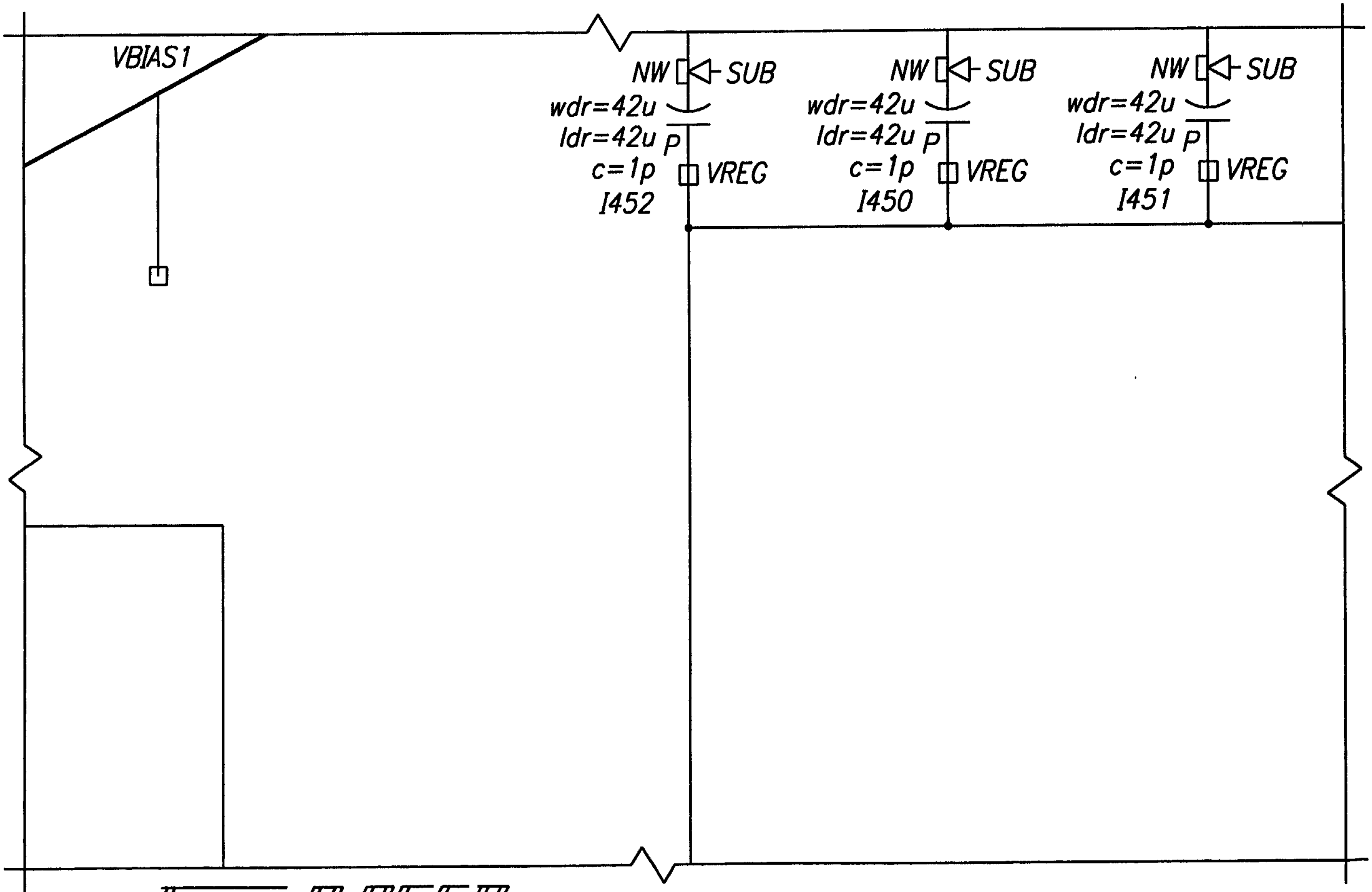

VBIAS1
NW
SUB
wdr=42u
ldr=42u
P
c=1p
VREG
I452
NW
SUB
wdr=42u
ldr=42u
P
c=1p
VREG
I450
NW
SUB
wdr=42u
ldr=42u
P
c=1p
VREG
I451

Fig 9.05EB

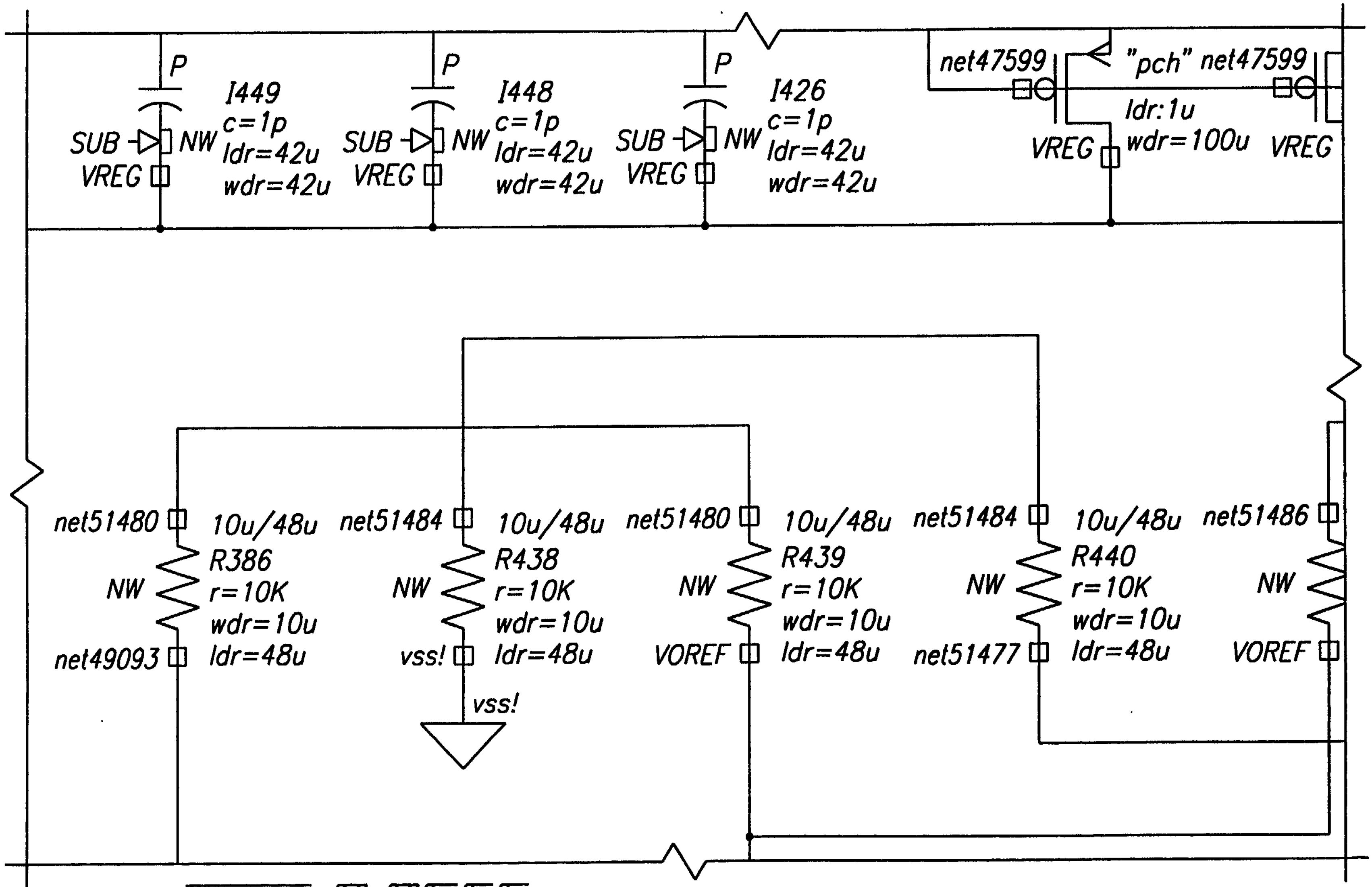

P
I449
c=1p
SUB
NW
ldr=42u
VREG
wdr=42u
P
I448
c=1p
SUB
NW
ldr=42u
VREG
wdr=42u
P
I426
c=1p
SUB
NW
ldr=42u
VREG
wdr=42u
net47599
"pch" net47599
ldr:1u
VREG
wdr=100u
VREG
net51480
10u/48u
R386
NW
r=10K
wdr=10u
net49093
ldr=48u
net51484
10u/48u
R438
NW
r=10K
wdr=10u
vss!
ldr=48u
vss!
net51480
10u/48u
R439
NW
r=10K
wdr=10u
VOREF
ldr=48u
net51484
10u/48u
R440
NW
r=10K
wdr=10u
net51477
ldr=48u
net51486
NW
VOREF

FIG 9.05EC

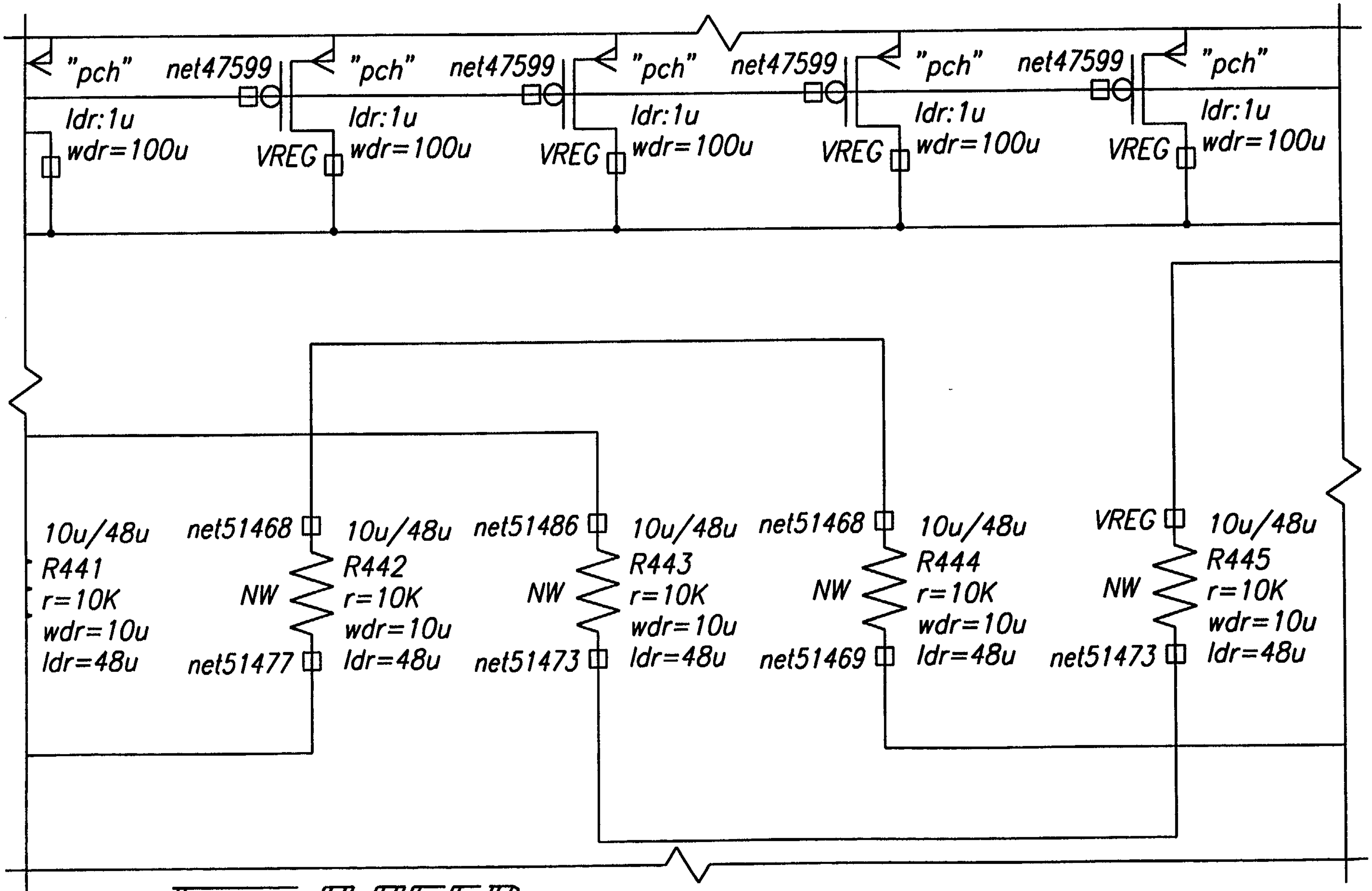

"pch"
net47599
ldr:1u
wdr=100u
VREG
"pch"
net47599
ldr:1u
wdr=100u
VREG
"pch"
net47599
ldr:1u
wdr=100u
VREG
"pch"
net47599
ldr:1u
wdr=100u
VREG
"pch"
ldr:1u
wdr=100u
10u/48u
R441
r=10K
wdr=10u
ldr=48u
net51468
NW
net51477
10u/48u
R442
r=10K
wdr=10u
ldr=48u
net51486
NW
net51473
10u/48u
R443
r=10K
wdr=10u
ldr=48u
net51468
NW
net51469
10u/48u
R444
r=10K
wdr=10u
ldr=48u
VREG
NW
net51473
10u/48u
R445
r=10K
wdr=10u
ldr=48u

Fig 9.05ED

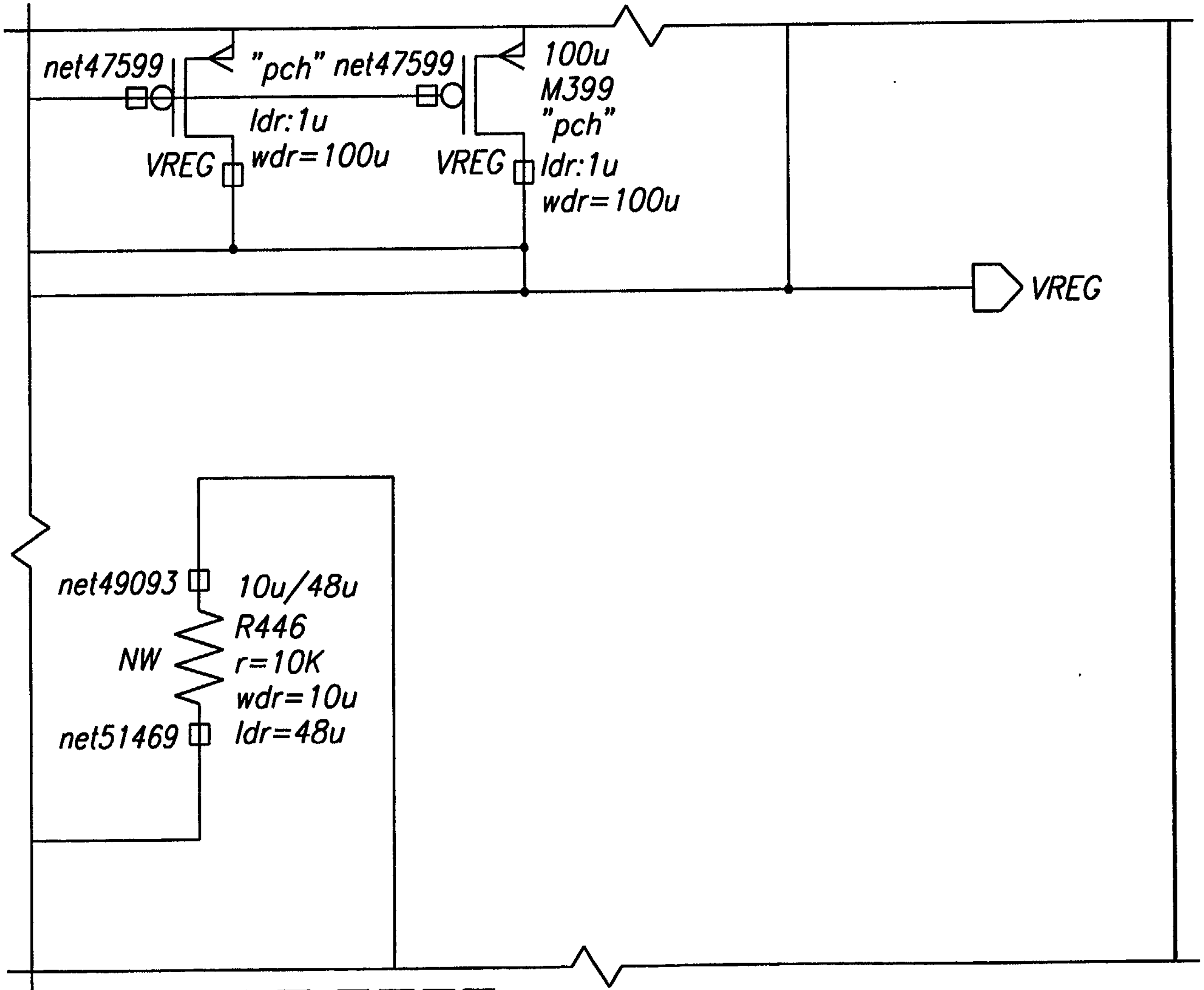

net47599
"pch" net47599
ldr:1u
wdr=100u
VREG
100u
M399
"pch"
VREG
ldr:1u
wdr=100u
VREG
net49093
10u/48u
R446
NW
r=10K
wdr=10u
net51469
ldr=48u

Fig 9.05EE

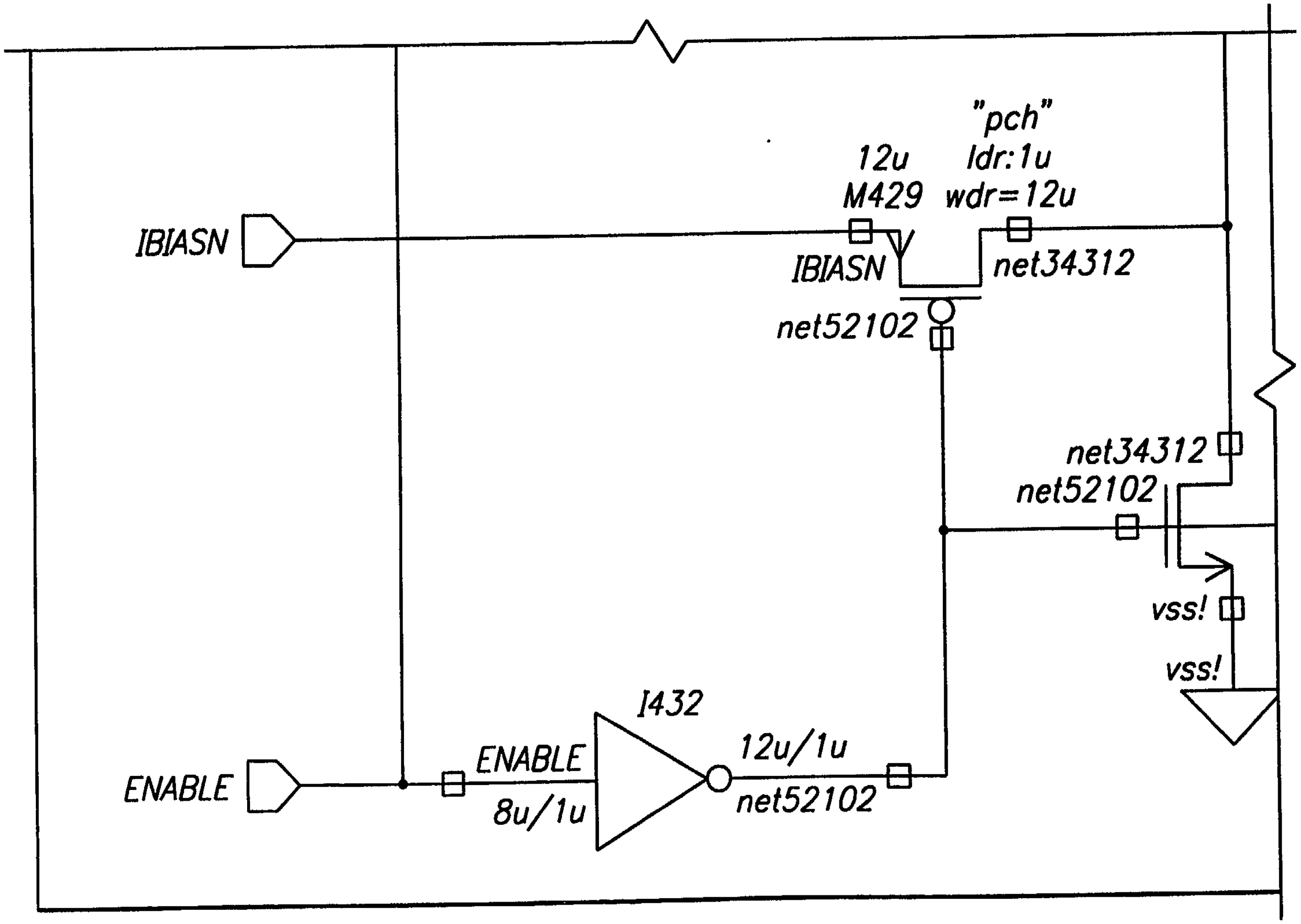

IBIASN
12u
M429
"pch"
ldr:1u
wdr=12u
IBIASN
net34312
net52102
net34312
net52102
vss!
vss!
ENABLE
ENABLE
8u/1u
I432
12u/1u
net52102

Fig 9.05FA

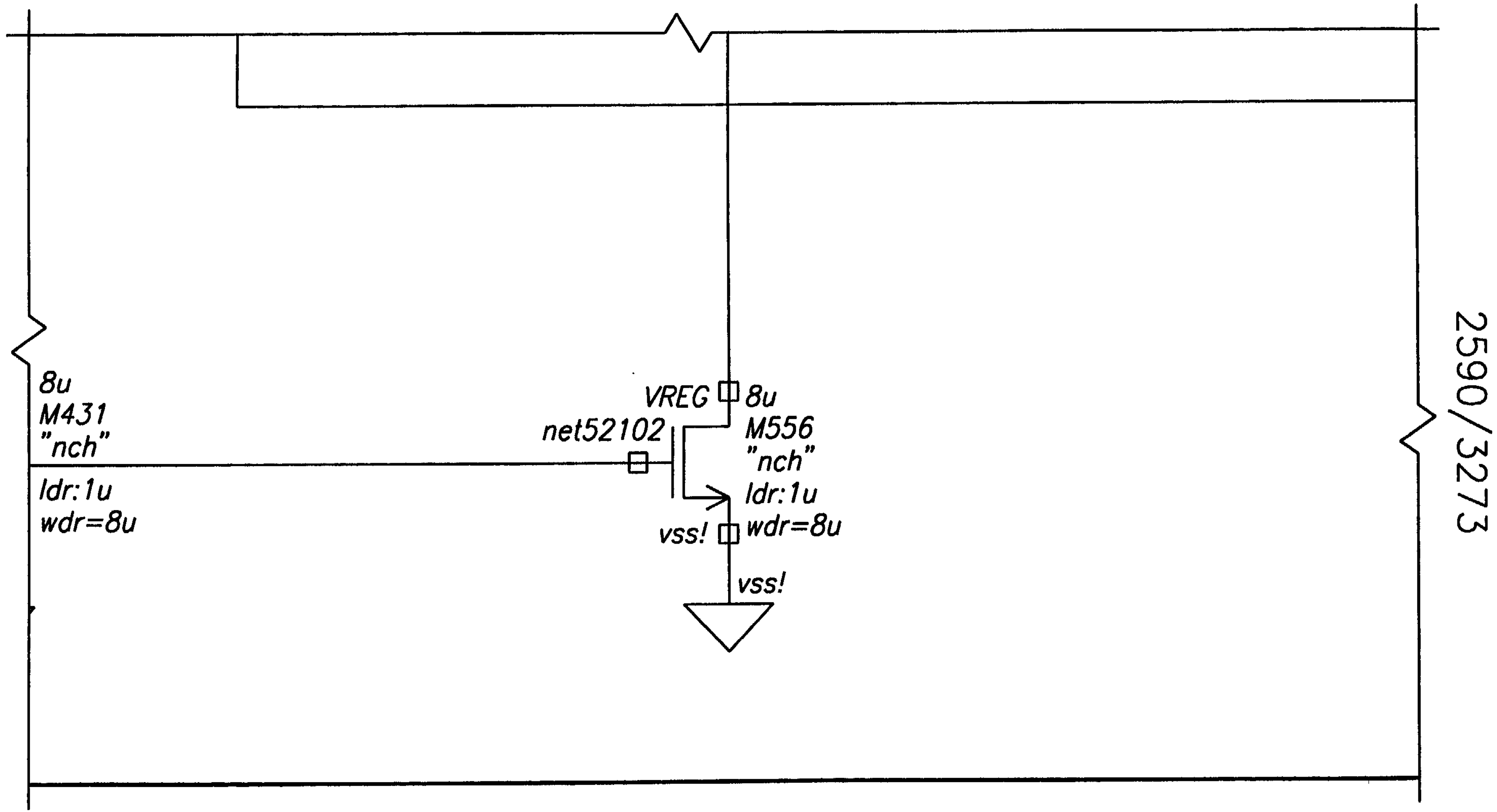
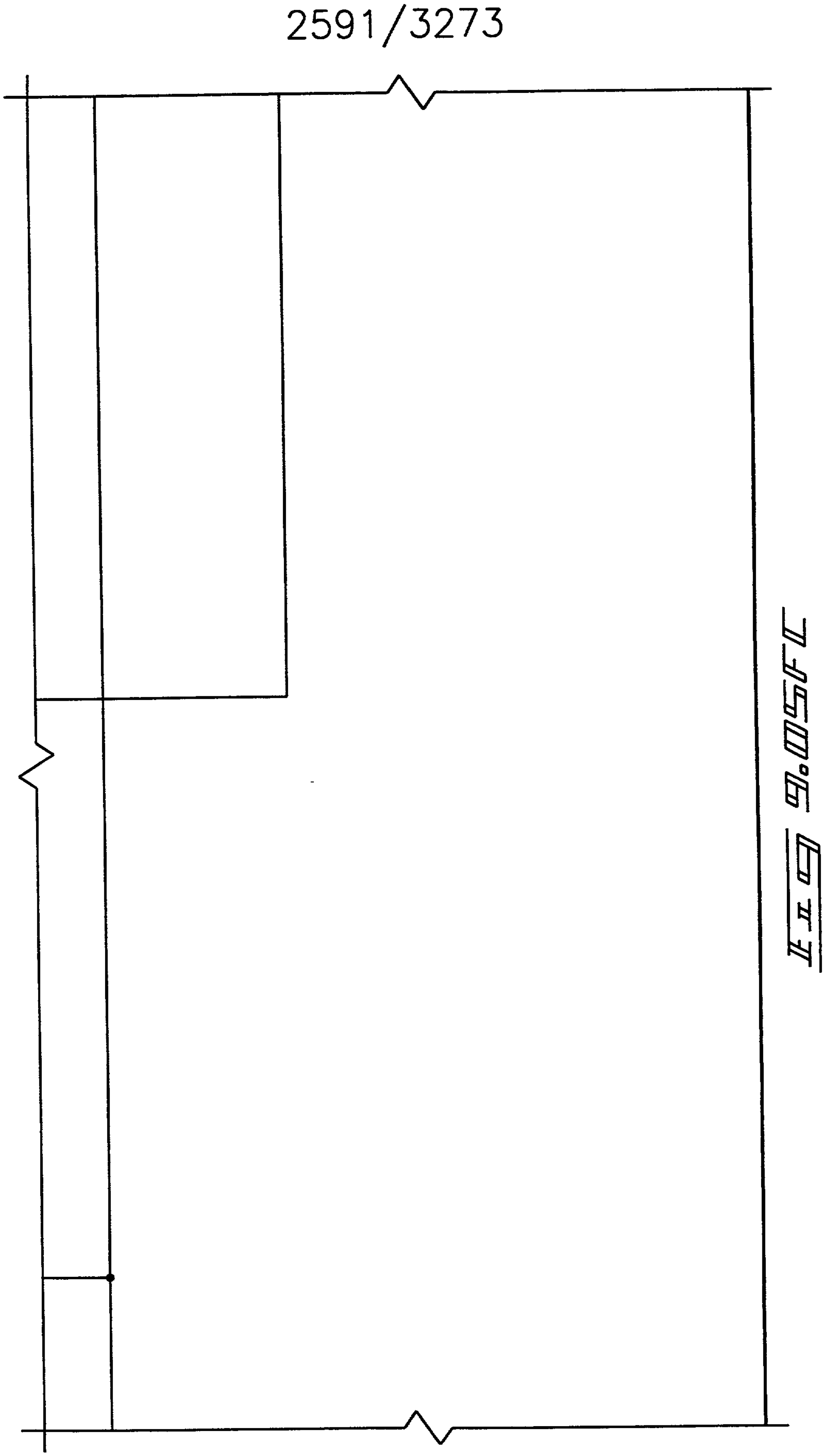

8u
M431
"nch"
ldr:1u
wdr=8u
VREG
8u
M556
"nch"
ldr:1u
wdr=8u
net52102
vss!
vss!
2590/3273

FIG 9.05B


2591/3273
Eng 9.05FC

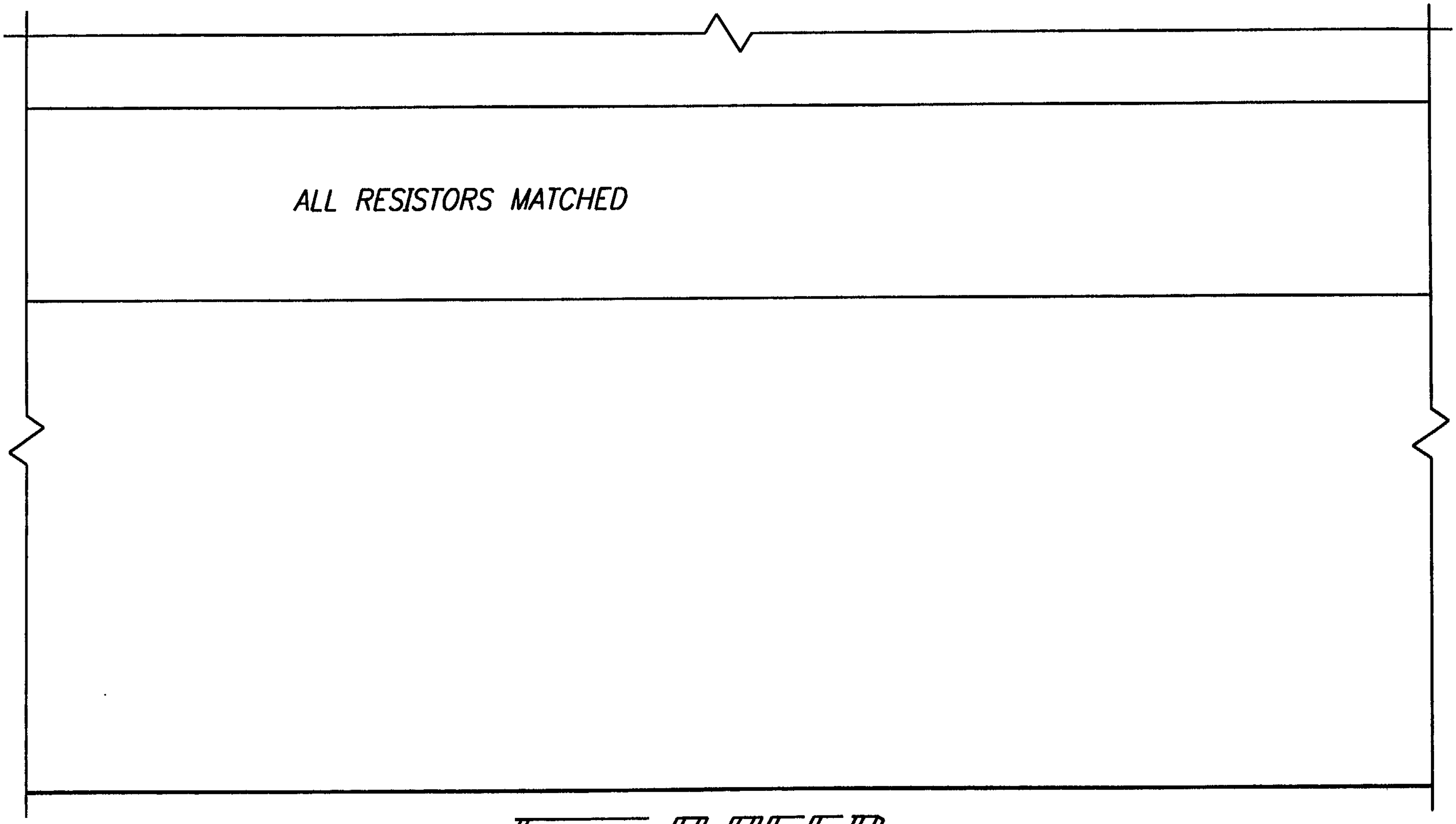


FIG 9.05FD

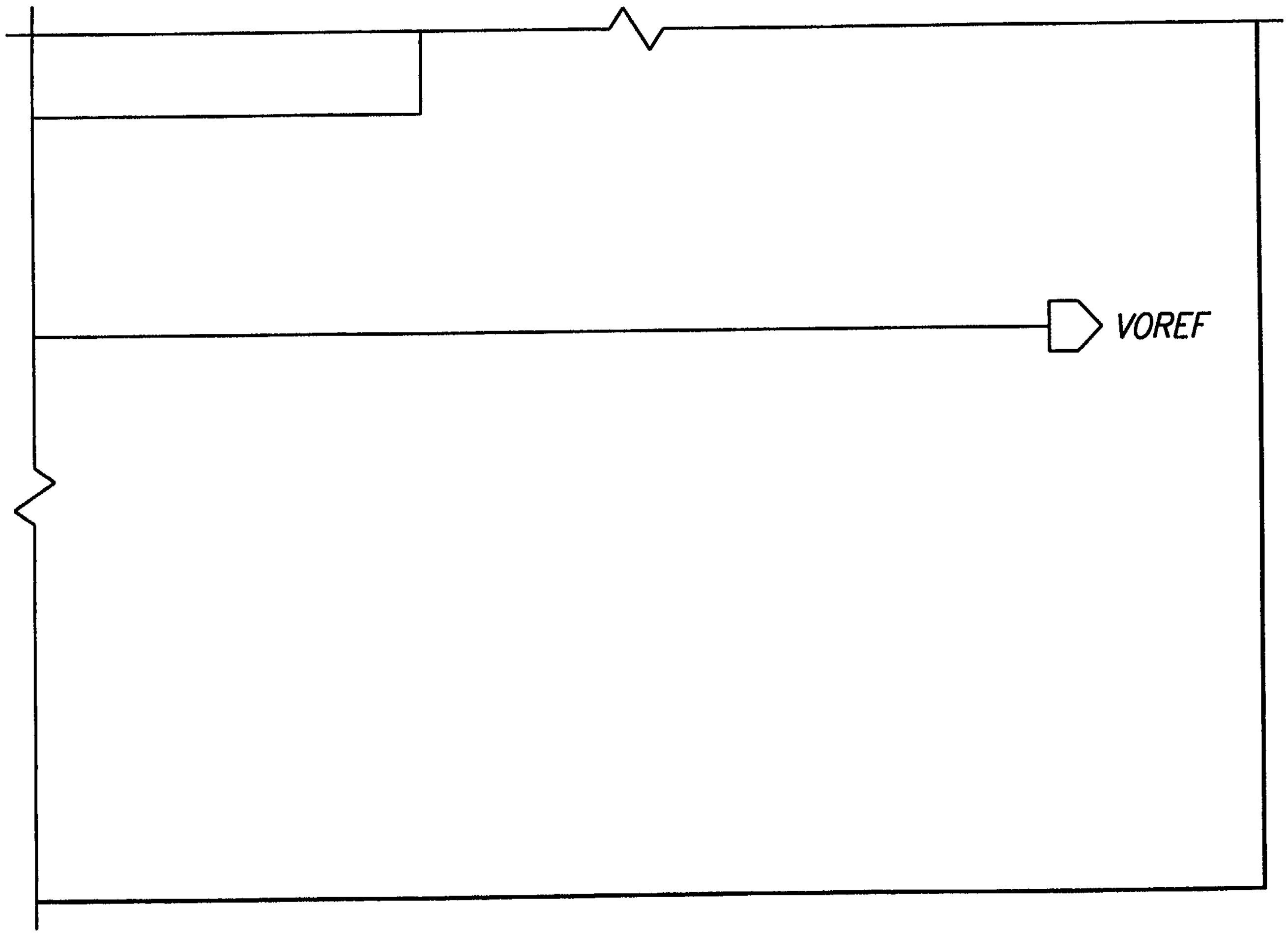


Fig 9.05FE

9.0501AA	9.0501AB	9.0501AC	9.0501AD
9.0501BA	9.0501BB	9.0501BC	9.0501BD
9.0501CA	9.0501CB	9.0501CC	9.0501CD

FIG 9.0501

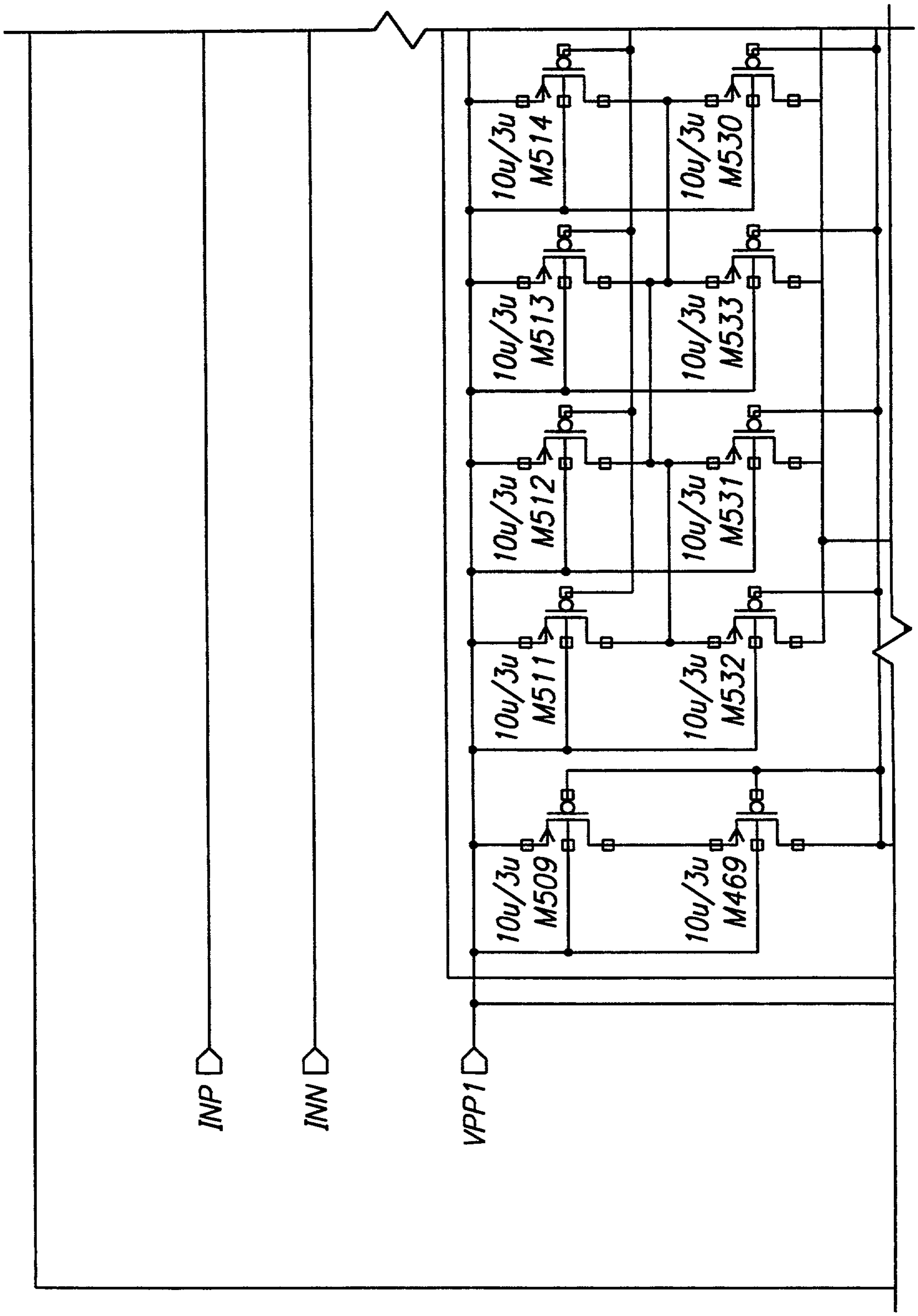

10u/3u
M514
10u/3u
M530
10u/3u
M513
10u/3u
M533
10u/3u
M512
10u/3u
M531
10u/3u
M511
10u/3u
M532
10u/3u
M509
10u/3u
M469
INP
INN
VPP1

Fig 9.050AA

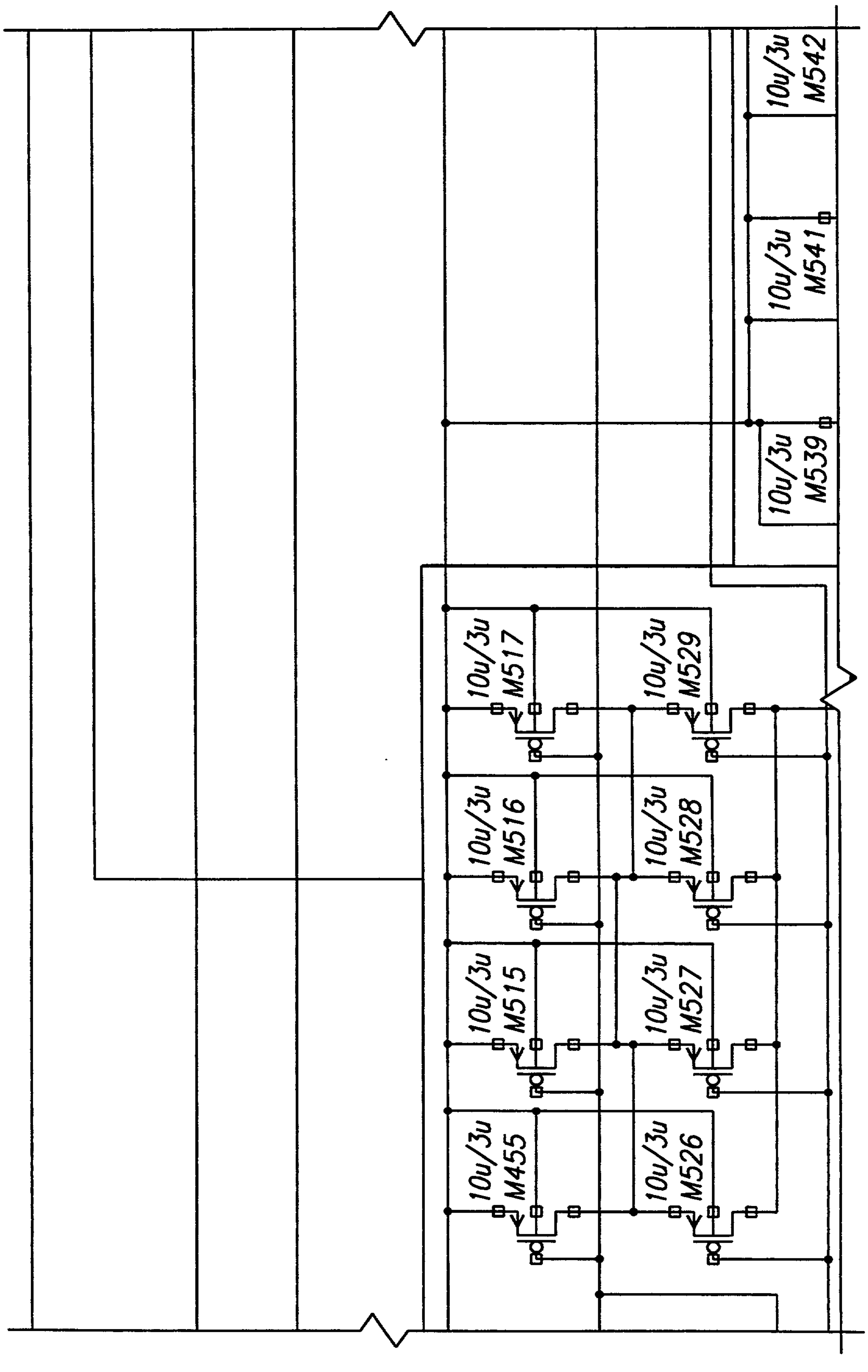

10u/3u
M542
10u/3u
M541
10u/3u
M539
10u/3u
M517
10u/3u
M529
10u/3u
M516
10u/3u
M528
10u/3u
M515
10u/3u
M527
10u/3u
M455
10u/3u
M526

Fig 9.05UAB

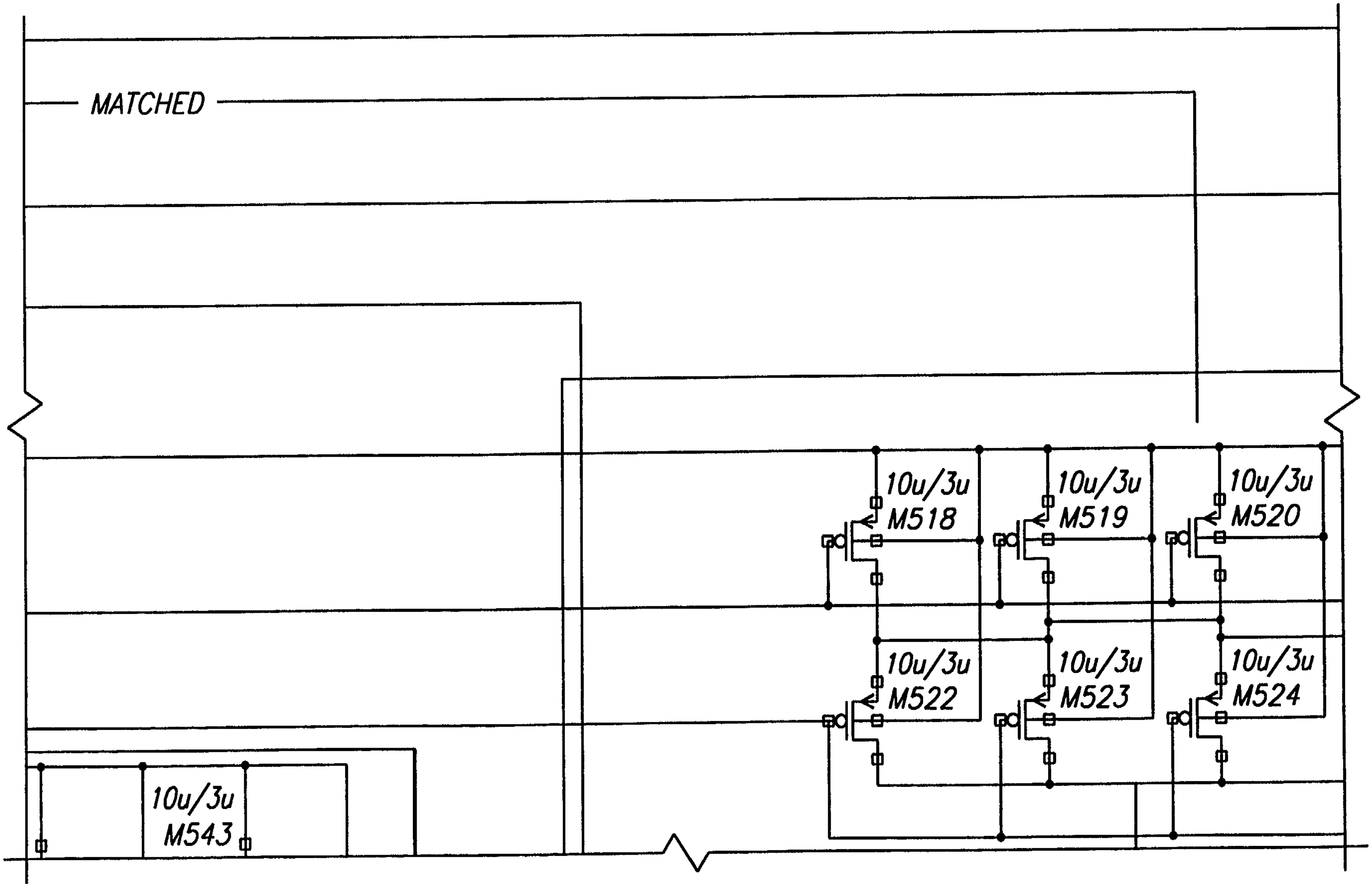

MATCHED
10u/3u
M518
10u/3u
M519
10u/3u
M520
10u/3u
M522
10u/3u
M523
10u/3u
M524
10u/3u
M543

Fig 9.050IAC

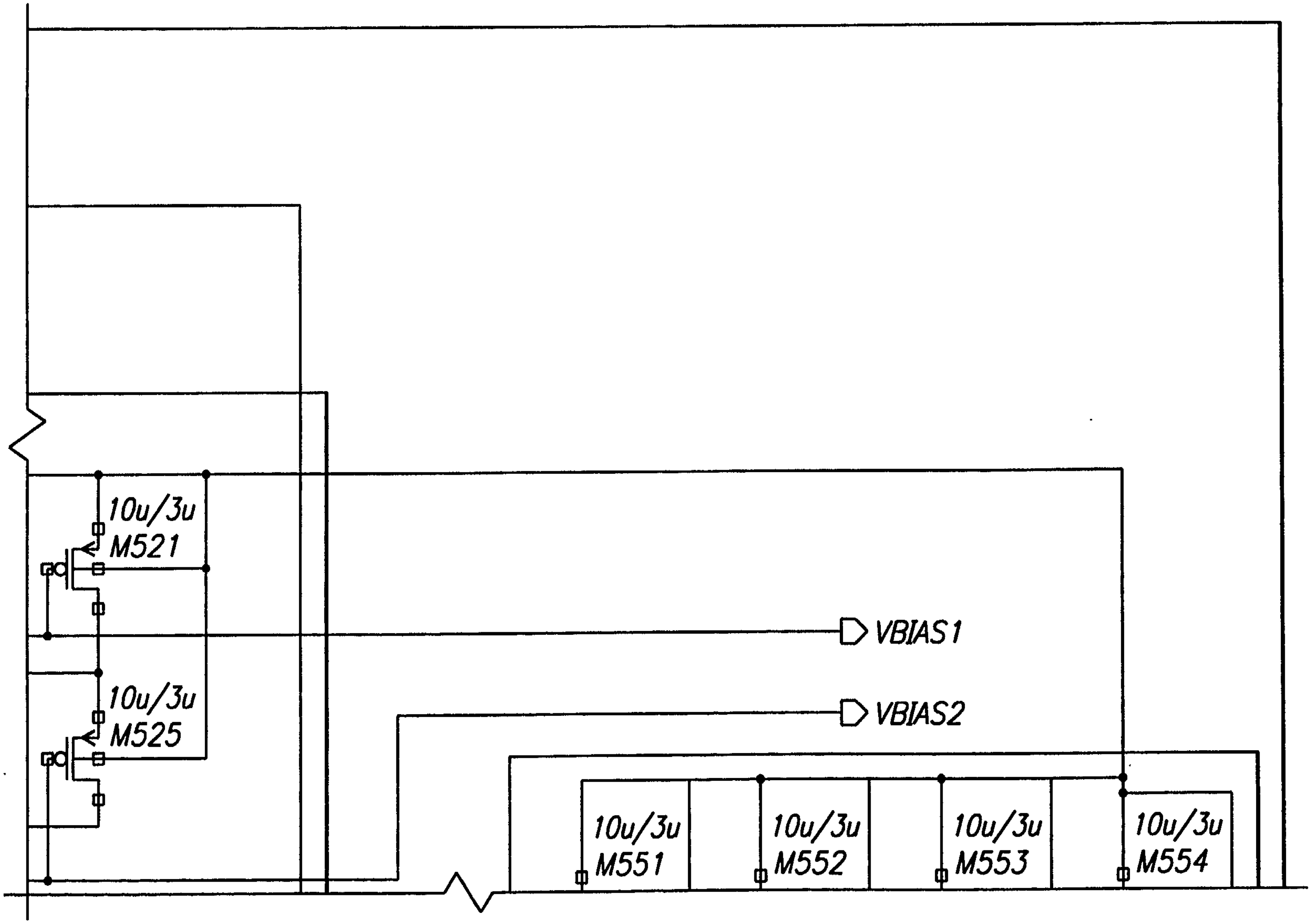

10u/3u
M521
10u/3u
M525
VBIAS1
VBIAS2
10u/3u
M551
10u/3u
M552
10u/3u
M553
10u/3u
M554

Fig 9.050IAD

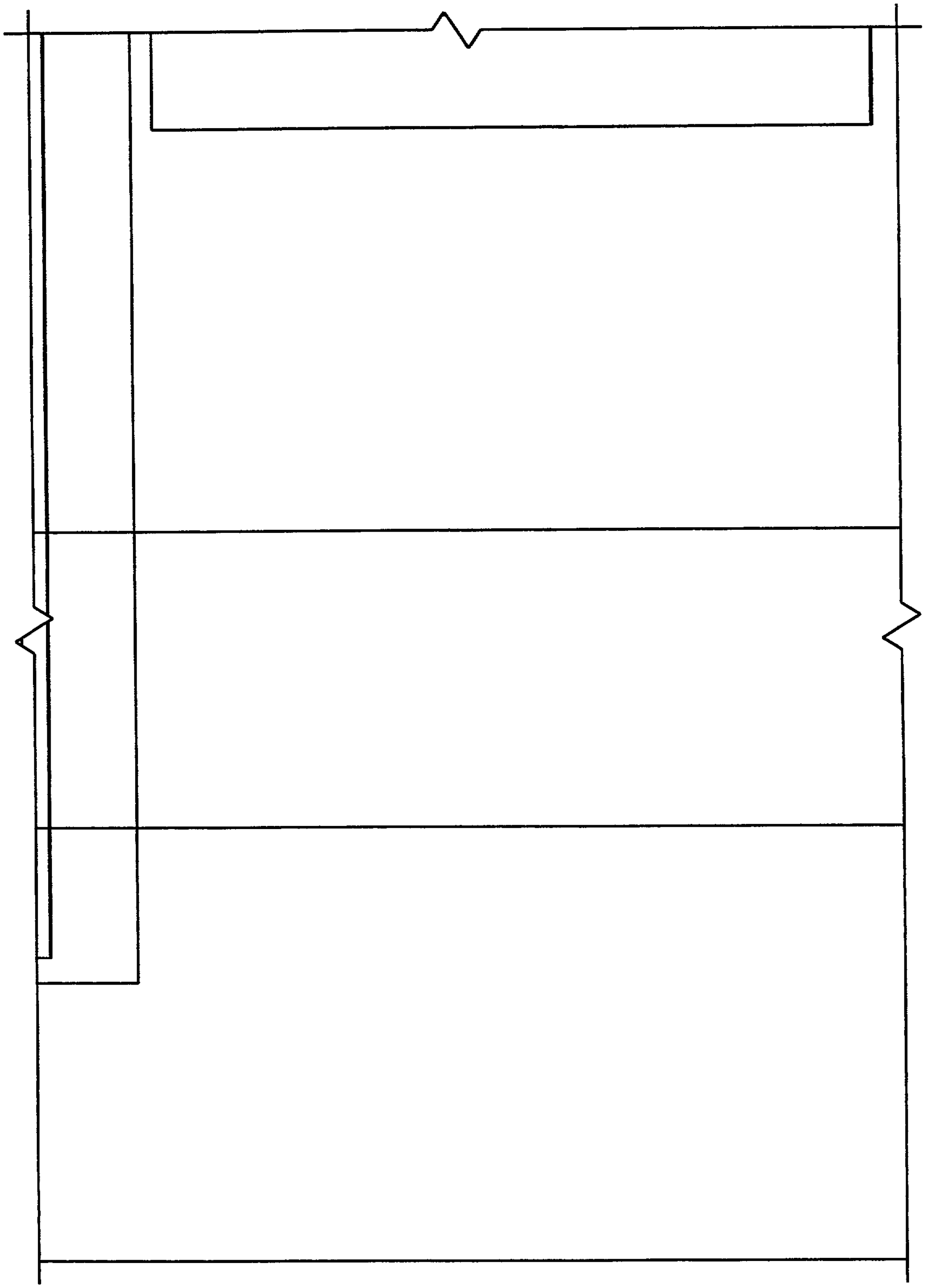


FIG 9.0501BA

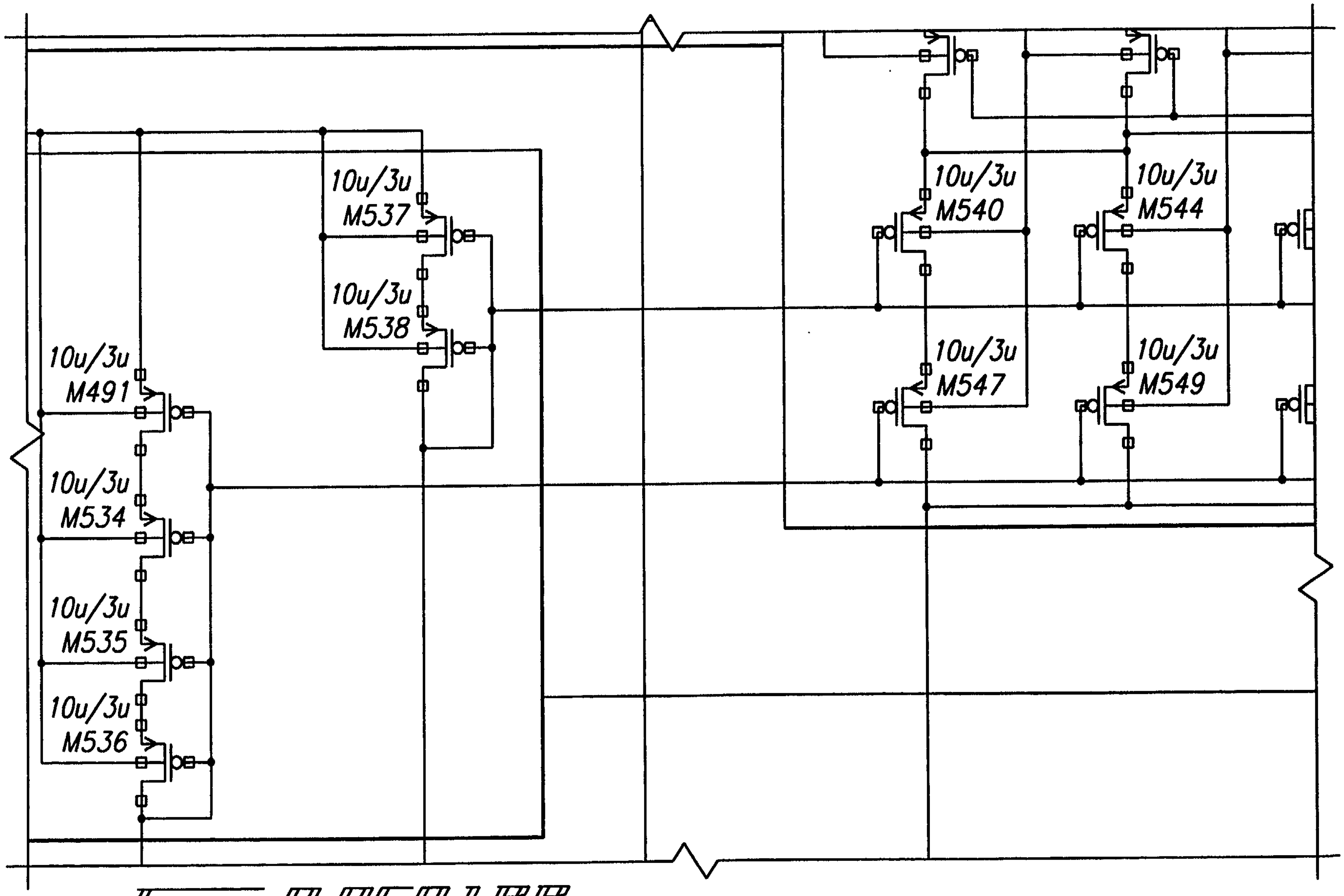

10u/3u
M537
10u/3u
M538
10u/3u
M491
10u/3u
M534
10u/3u
M535
10u/3u
M536
10u/3u
M540
10u/3u
M544
10u/3u
M547
10u/3u
M549

Fig 9.0501BB

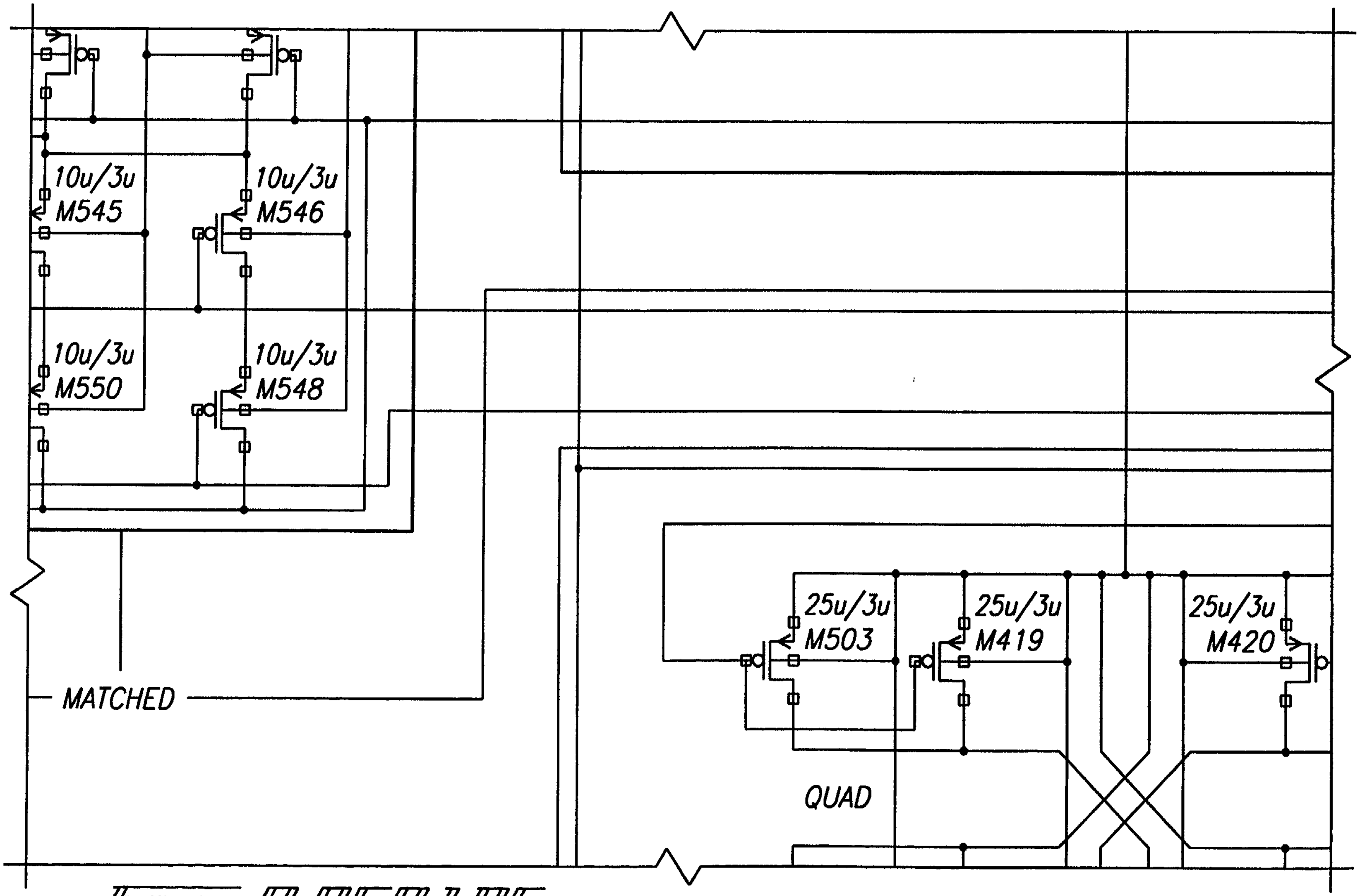

10u/3u
M545
10u/3u
M546
10u/3u
M550
10u/3u
M548
MATCHED
25u/3u
M503
25u/3u
M419
25u/3u
M420
QUAD

Fig 9.0501BC

2602/3273

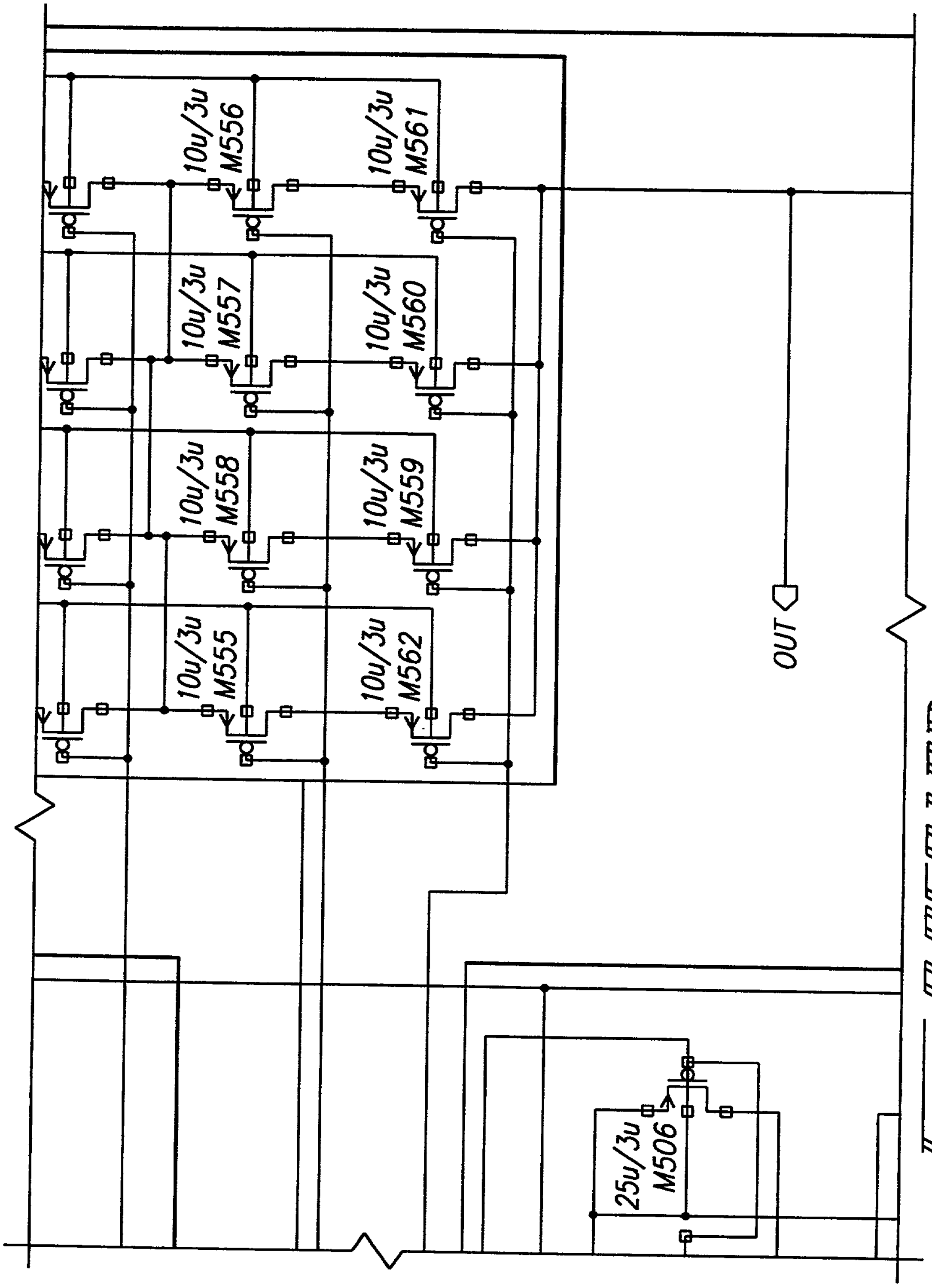


FIG 9.05011BD

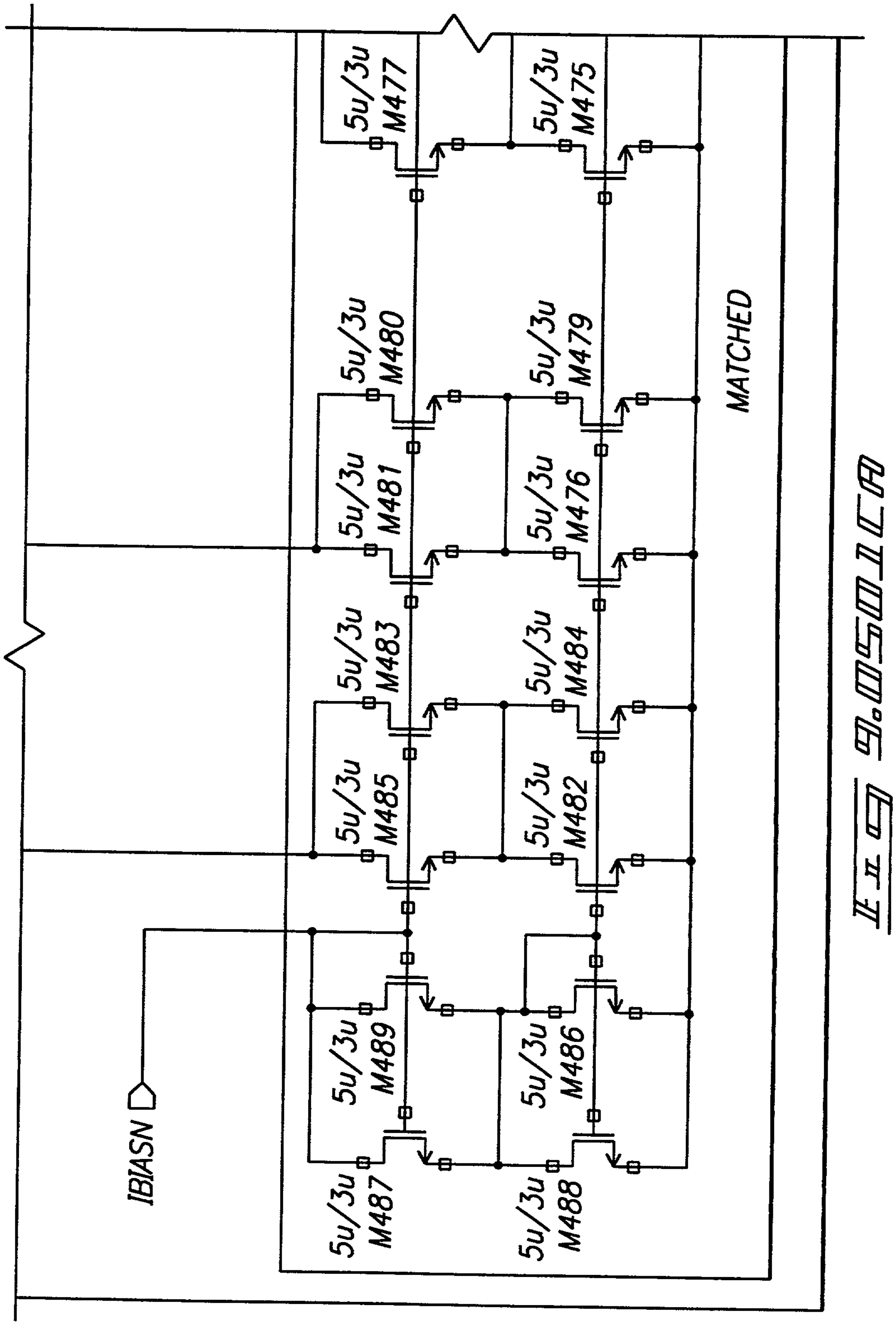

5u/3u
M477
5u/3u
M475
5u/3u
M480
5u/3u
M479
MATCHED
5u/3u
M481
5u/3u
M476
5u/3u
M483
5u/3u
M484
5u/3u
M485
5u/3u
M482
5u/3u
M489
5u/3u
M486
IBIASN
5u/3u
M487
5u/3u
M488

Fig 9.0501CA

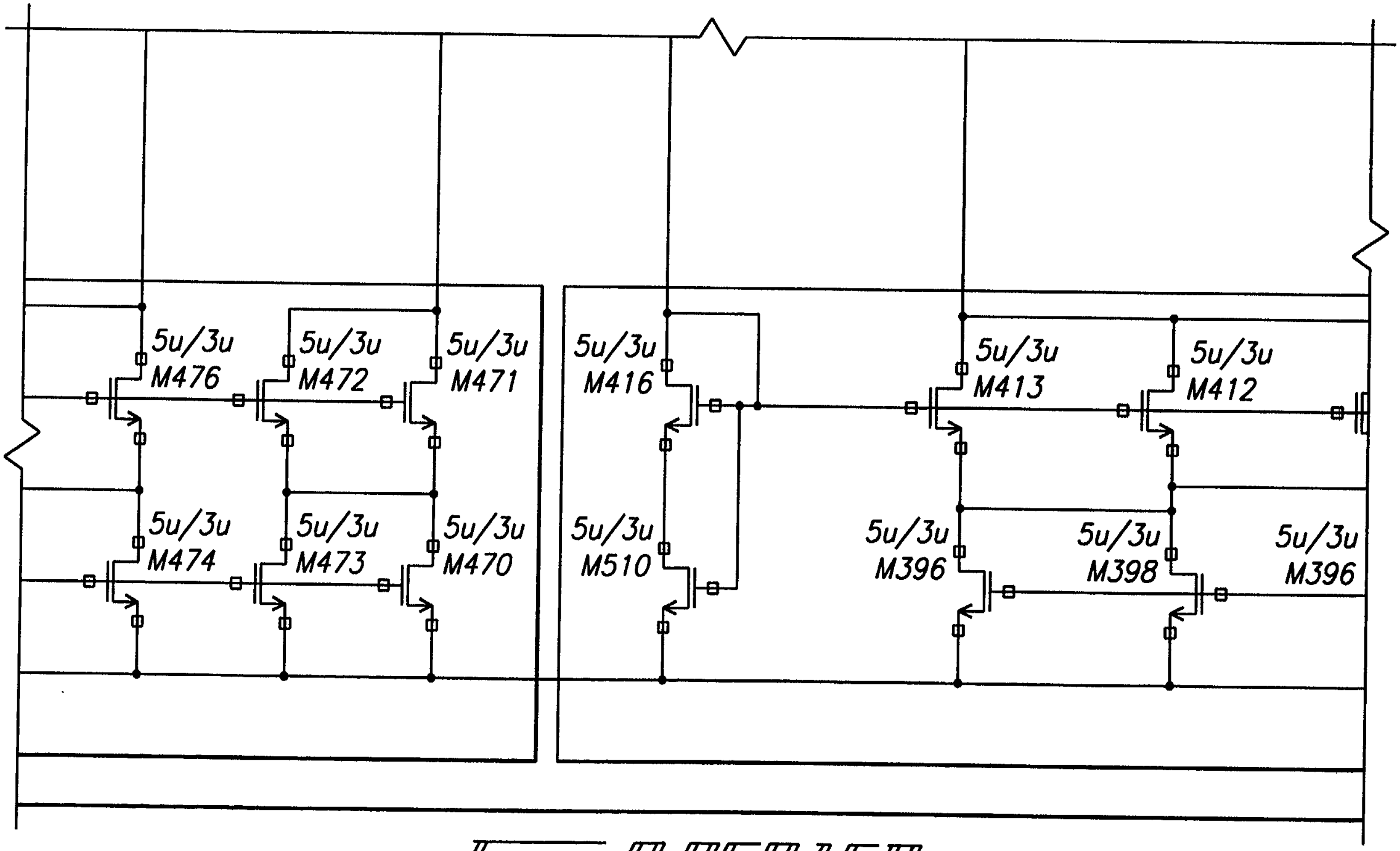

5u/3u
M476
5u/3u
M472
5u/3u
M471
5u/3u
M474
5u/3u
M473
5u/3u
M470
5u/3u
M416
5u/3u
M510
5u/3u
M413
5u/3u
M412
5u/3u
M396
5u/3u
M398
5u/3u
M396

Fig 9.0501CB

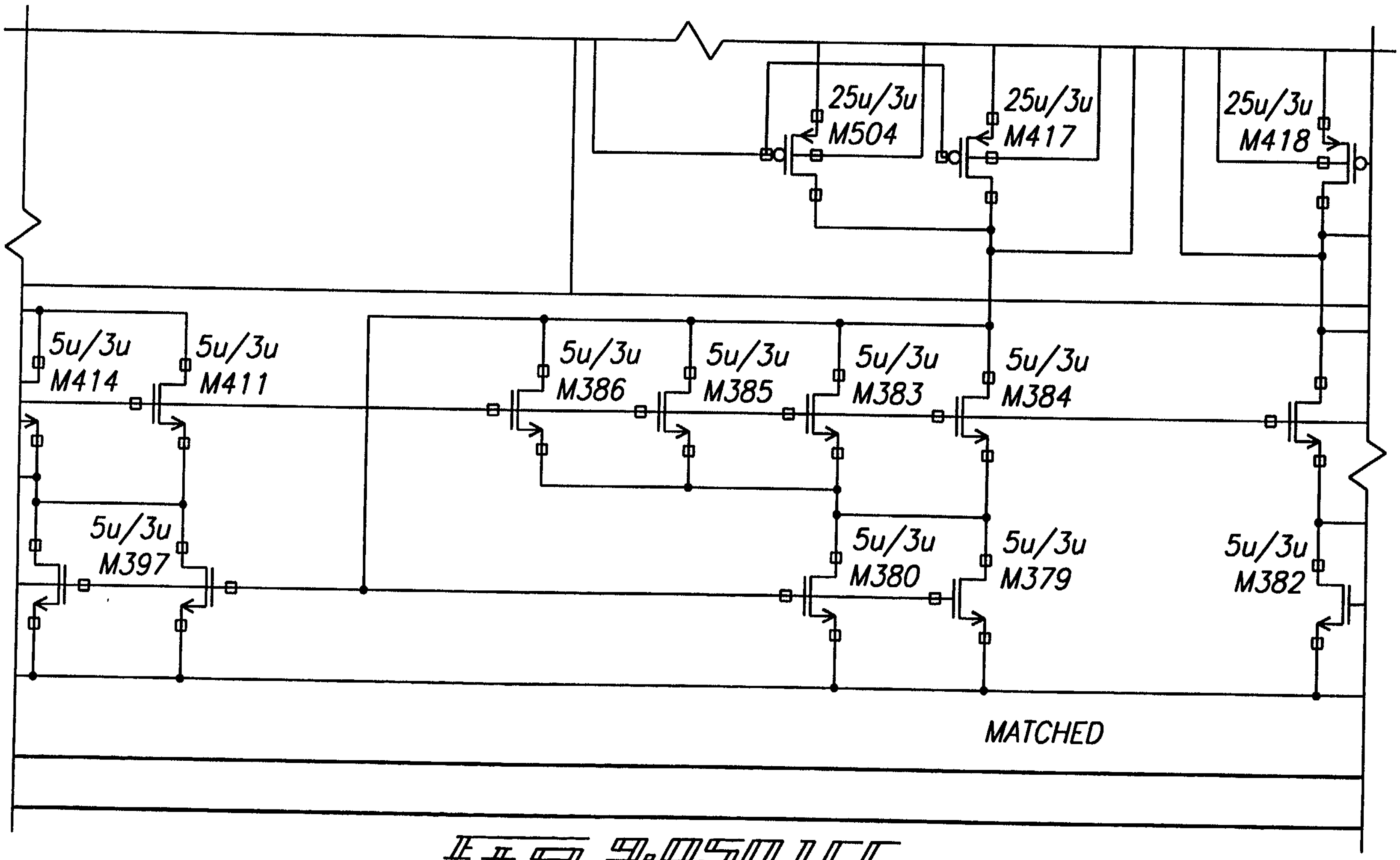

25u/3u
M504
25u/3u
M417
25u/3u
M418
5u/3u
M414
5u/3u
M411
5u/3u
M386
5u/3u
M385
5u/3u
M383
5u/3u
M384
5u/3u
M397
5u/3u
M380
5u/3u
M379
5u/3u
M382
MATCHED

Fig 9.0501CC

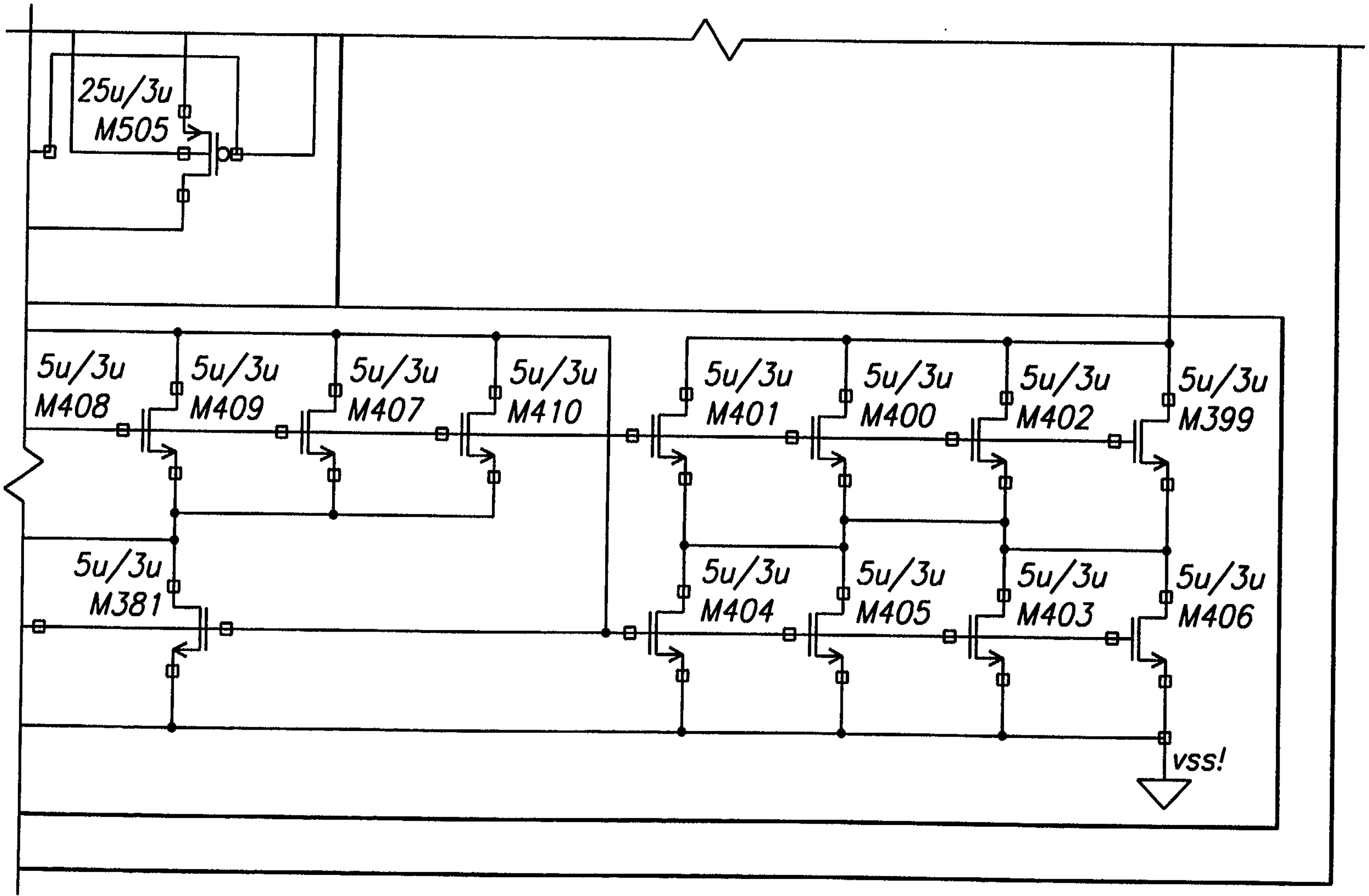

25u/3u
M505
5u/3u
M408
5u/3u
M409
5u/3u
M407
5u/3u
M410
5u/3u
M381
5u/3u
M401
5u/3u
M400
5u/3u
M402
5u/3u
M399
5u/3u
M404
5u/3u
M405
5u/3u
M403
5u/3u
M406
vss!

Fig 9.0501CD

2607/3273

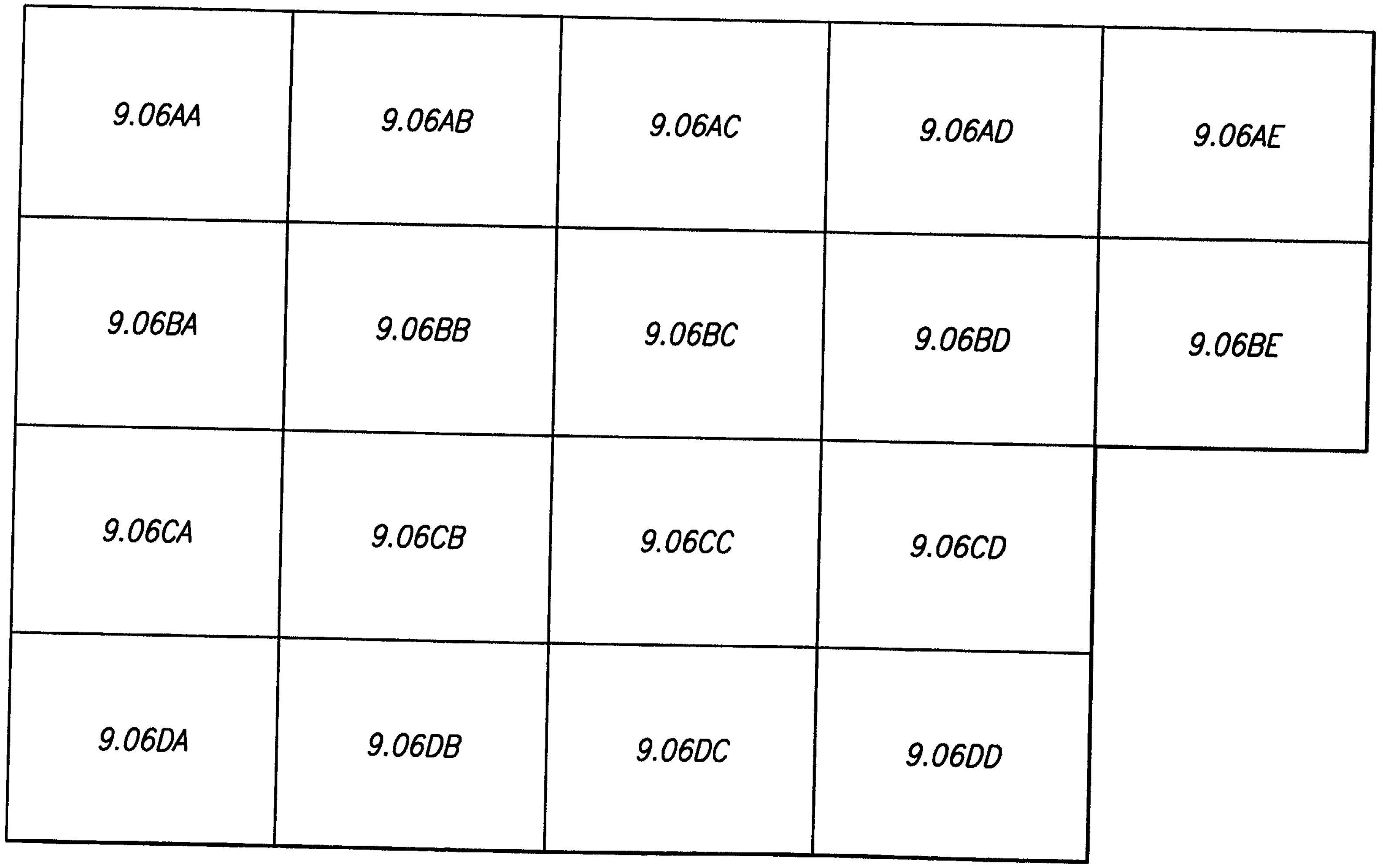


FIG 9.06

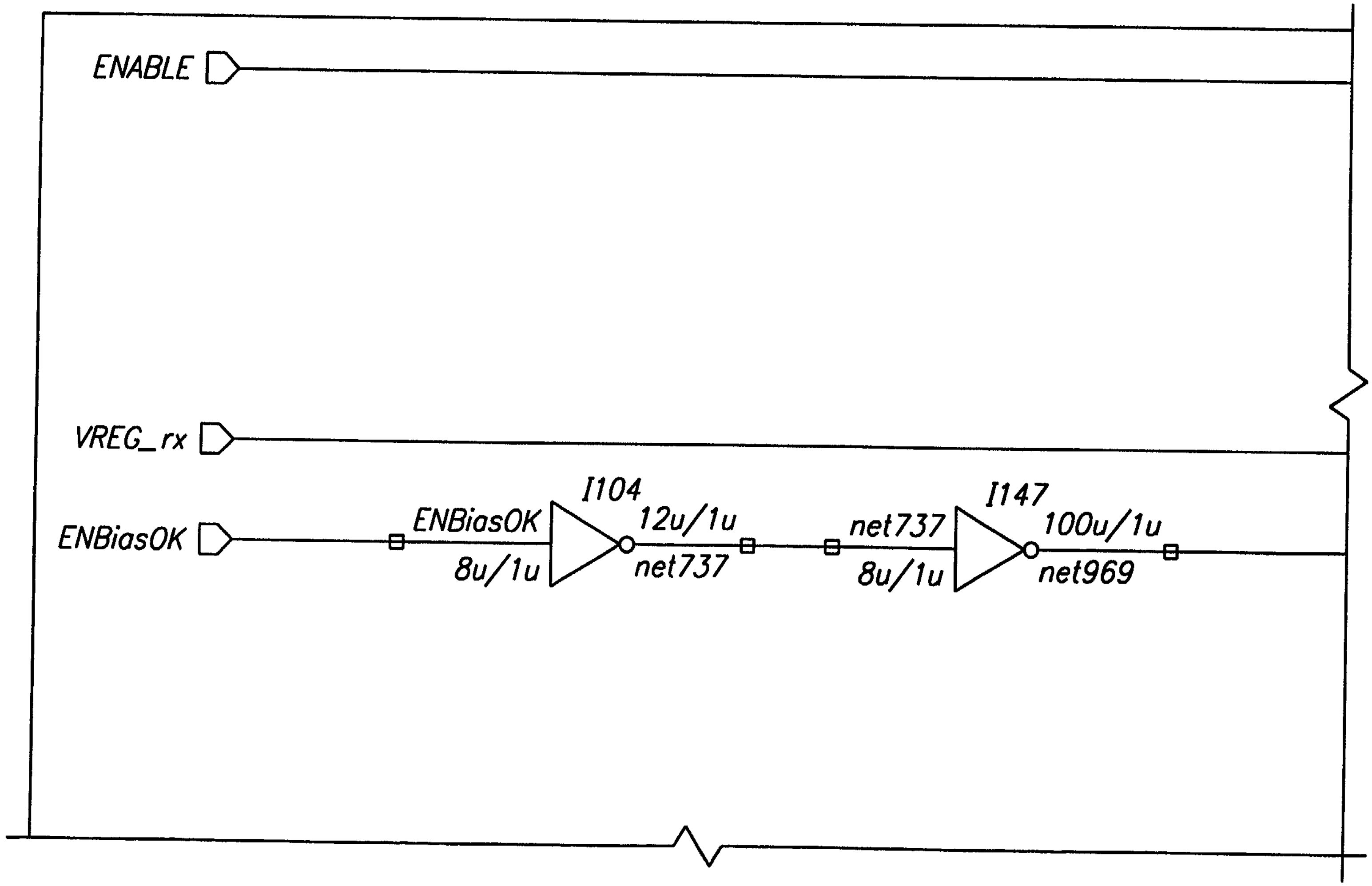

ENABLE
VREG_rx
ENBiasOK
ENBiasOK
8u/1u
I104
12u/1u
net737
net737
8u/1u
I147
100u/1u
net969

Fig 9.06AA

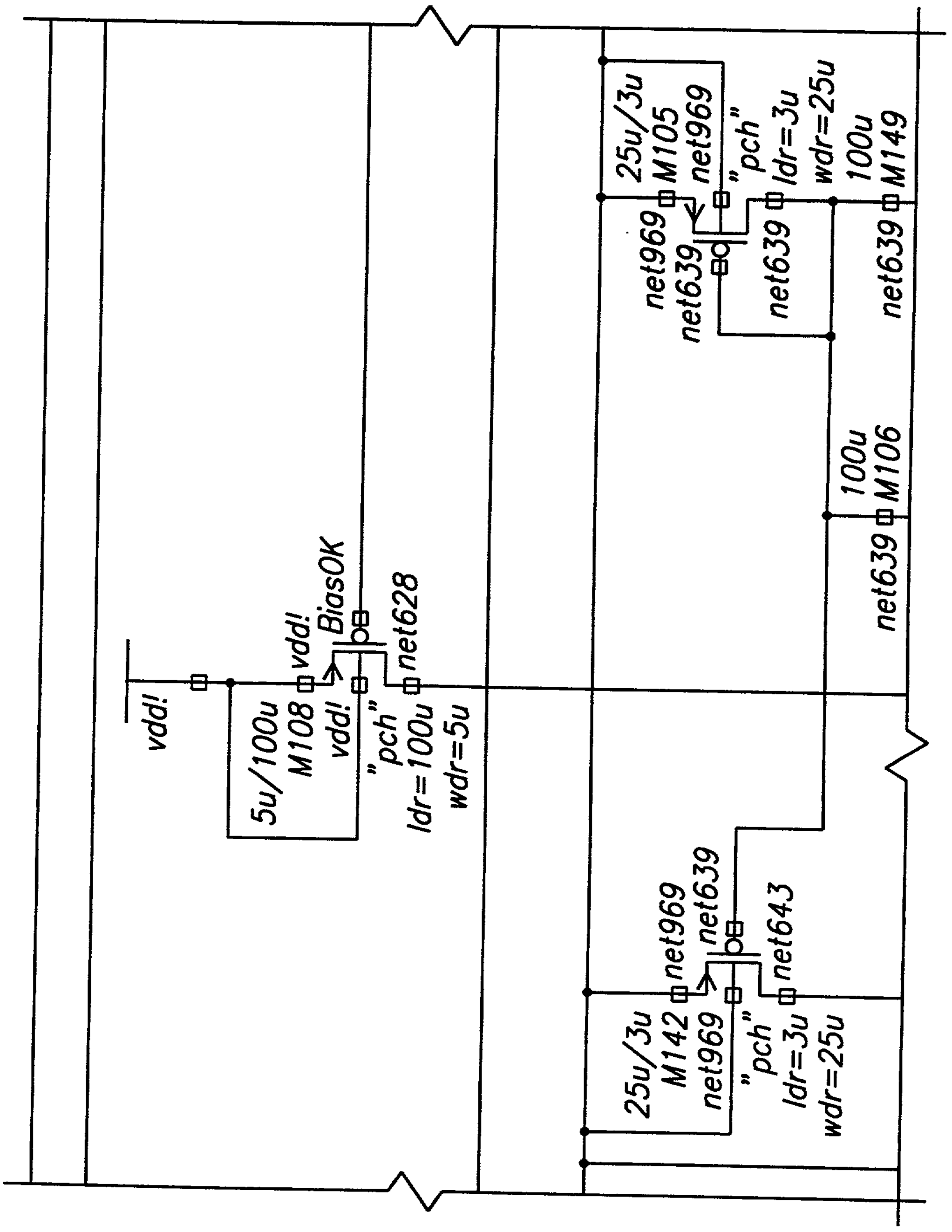

vdd!
5u/100u
M108
vdd!
vdd!
BiasOK
"pch"
ldr=100u
wdr=5u
net628
25u/3u
M105
net969
net969
net639
"pch"
ldr=3u
wdr=25u
net639
100u
M149
net639
100u
M106
net639
25u/3u
M142
net969
net969
net639
"pch"
ldr=3u
wdr=25u
net643

FIG 9.06AB

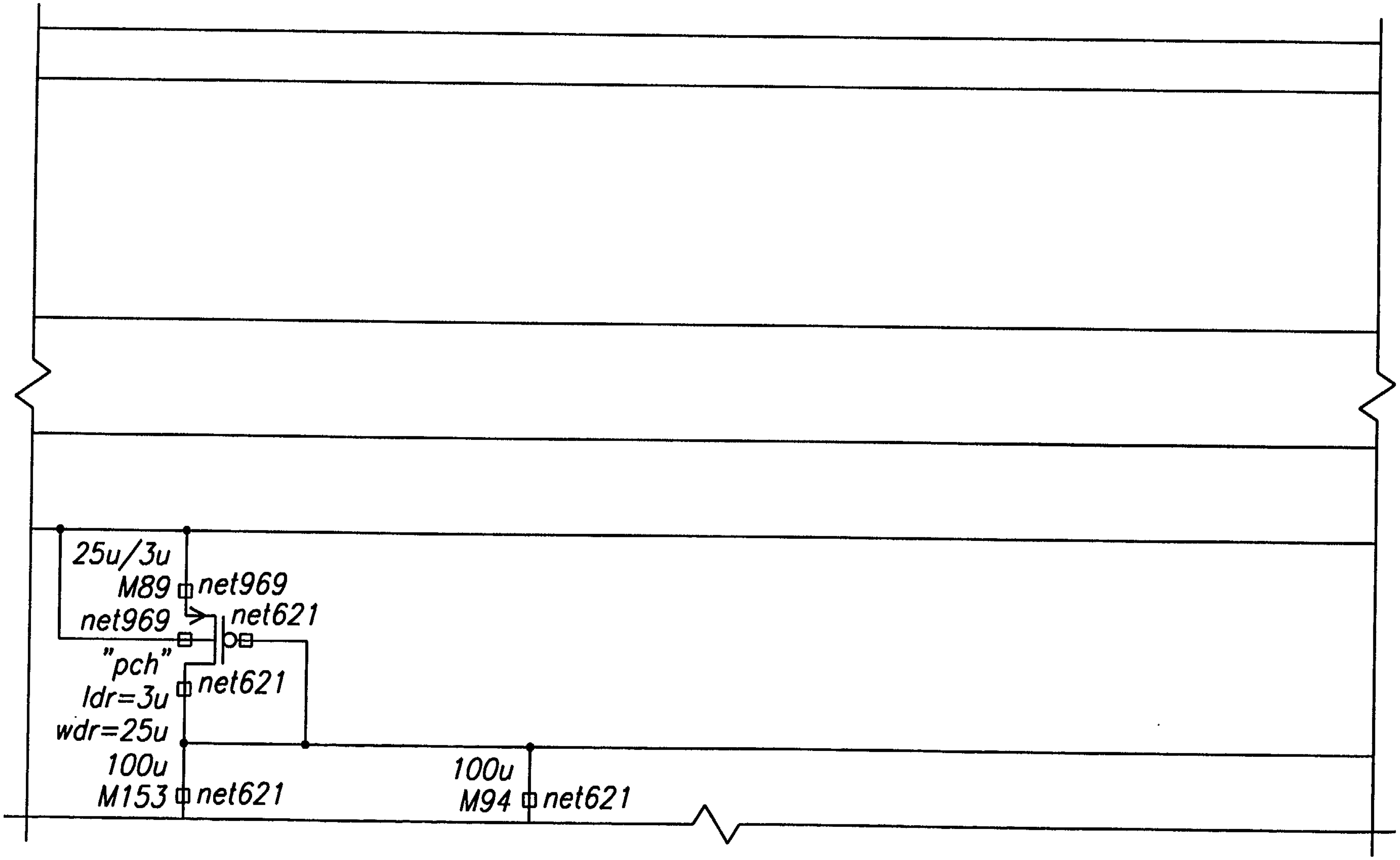

25u/3u
M89
net969
net969
net621
"pch"
ldr=3u
wdr=25u
net621
100u
M153
net621
100u
M94
net621

Fig 9.06AC

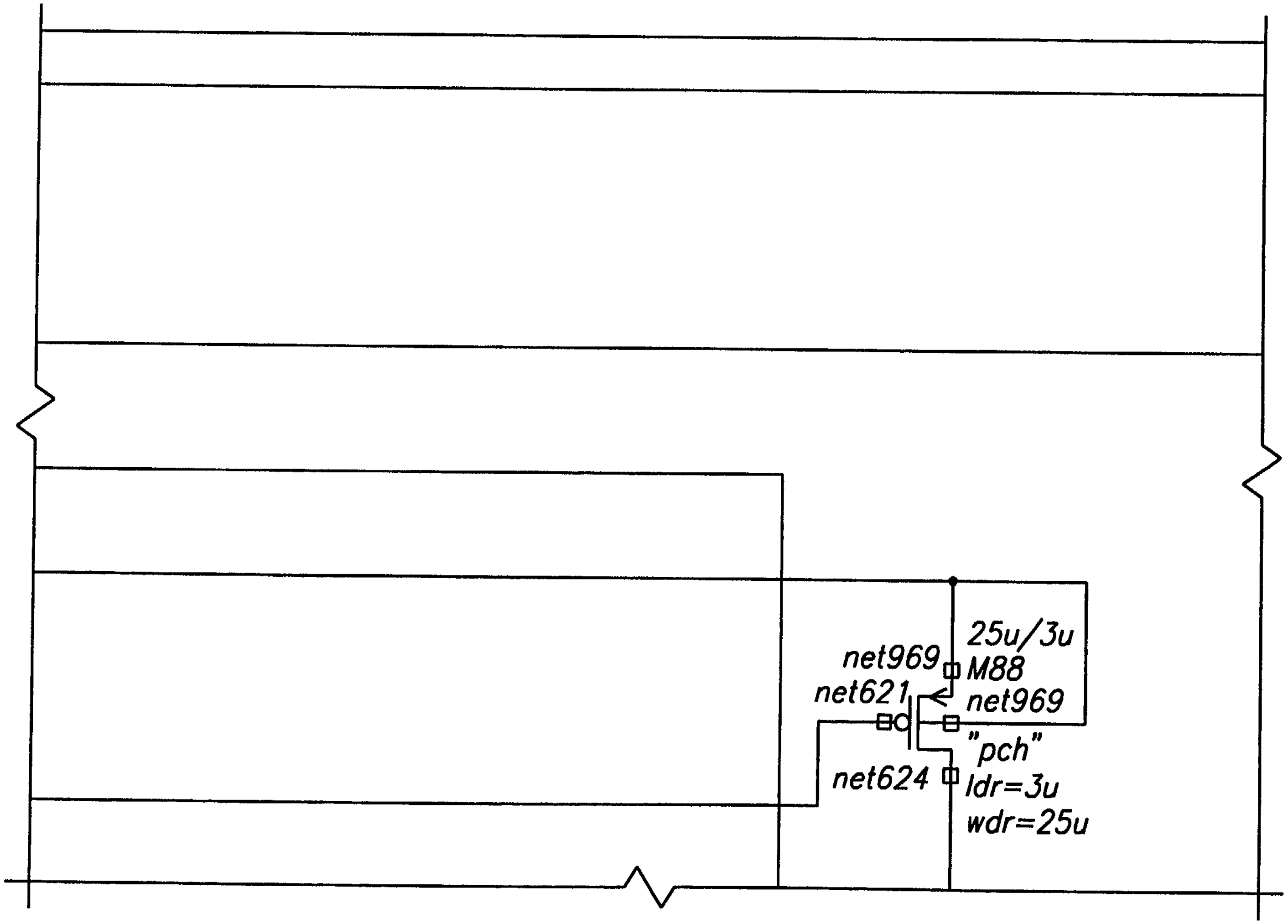


Fig 9.06AD

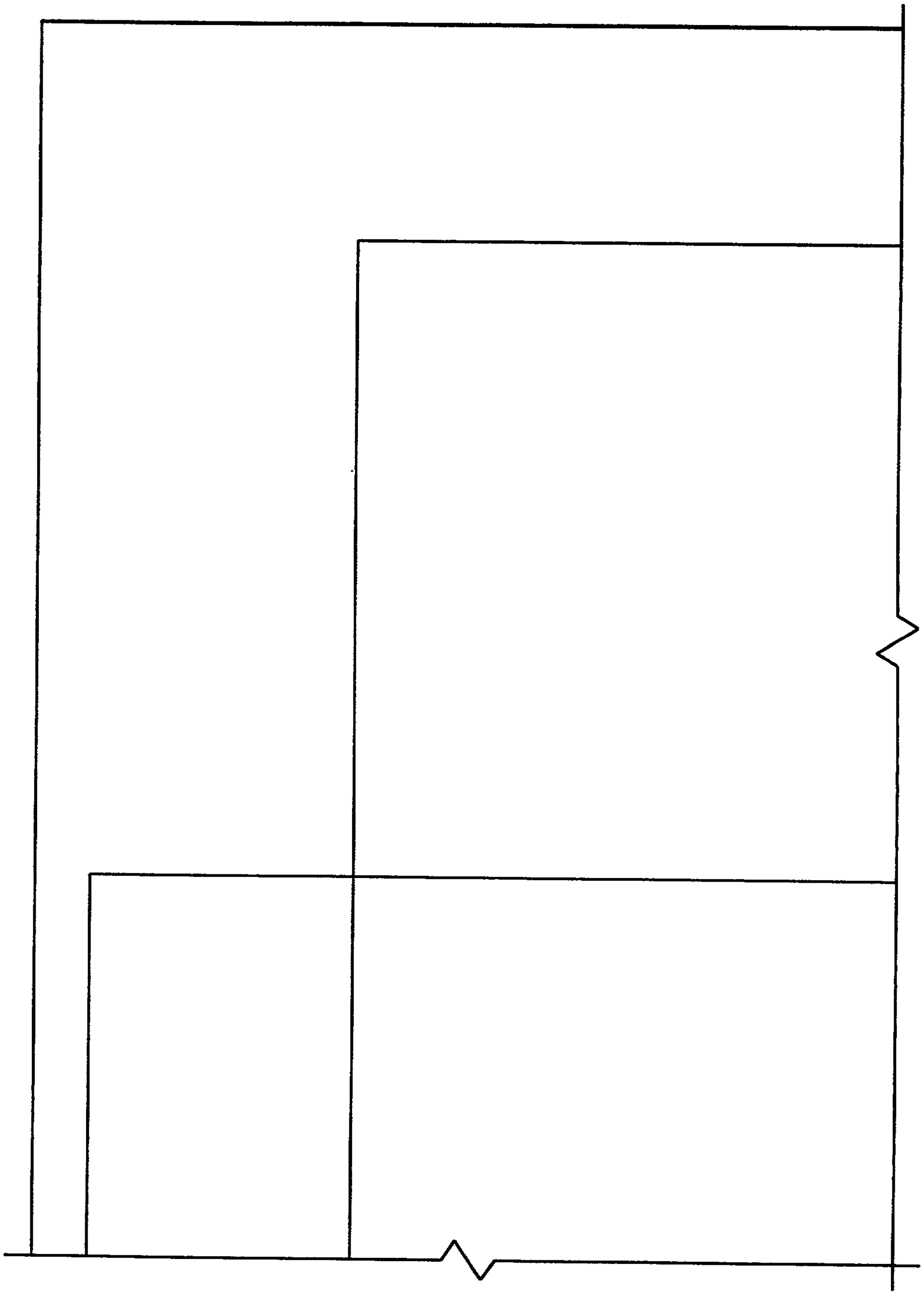


Fig 9.06AE

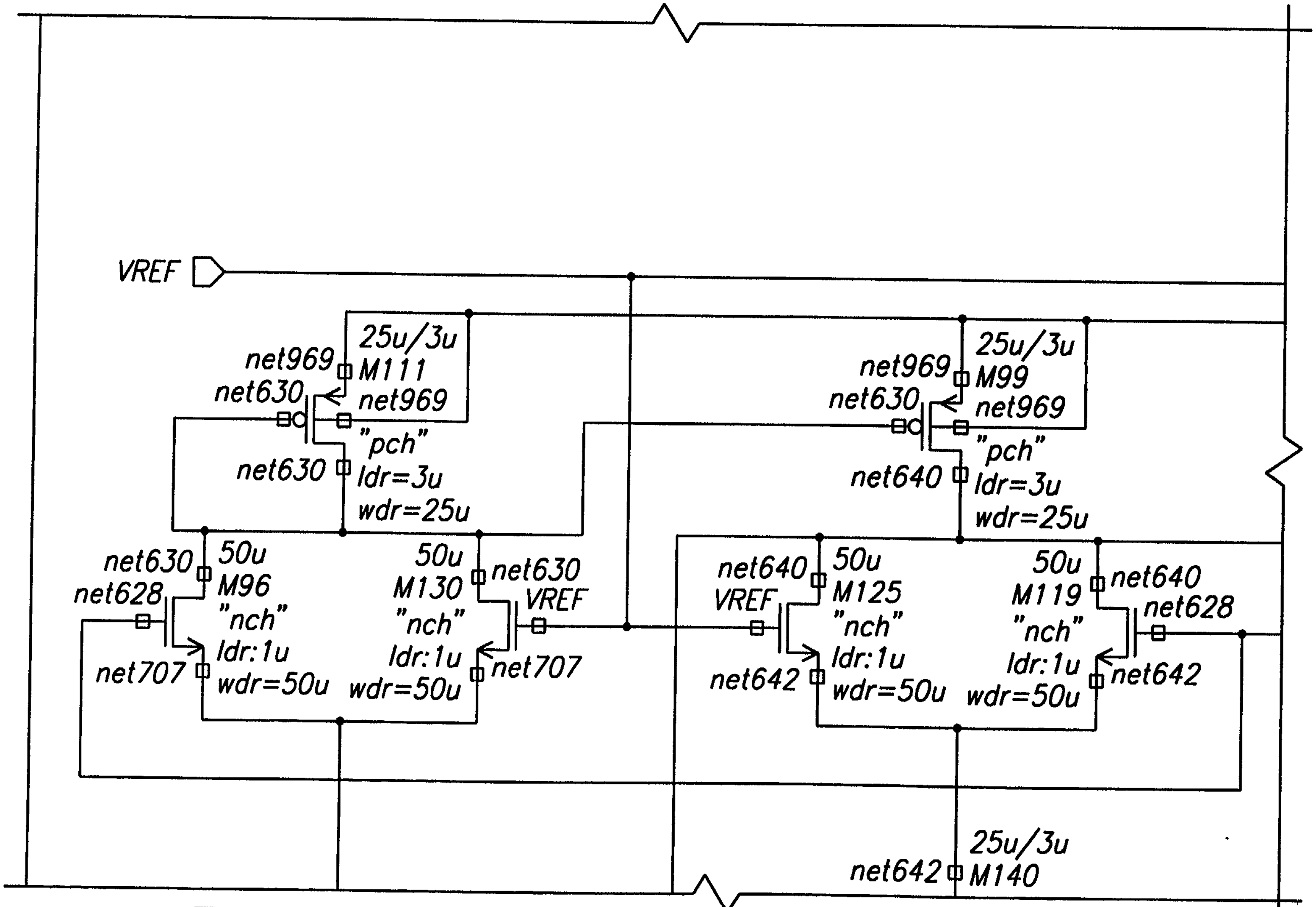

VREF
25u/3u
M111
net969
net969
net630
"pch"
net630
ldr=3u
wdr=25u
25u/3u
M99
net969
net969
net630
"pch"
net640
ldr=3u
wdr=25u
net630
net628
50u
M96
"nch"
net707
ldr:1u
wdr=50u
50u
M130
"nch"
ldr:1u
wdr=50u
net630
VREF
net707
net640
VREF
50u
M125
"nch"
net642
ldr:1u
wdr=50u
50u
M119
"nch"
ldr:1u
wdr=50u
net640
net628
net642
25u/3u
net642
M140

Fig 9.06BA

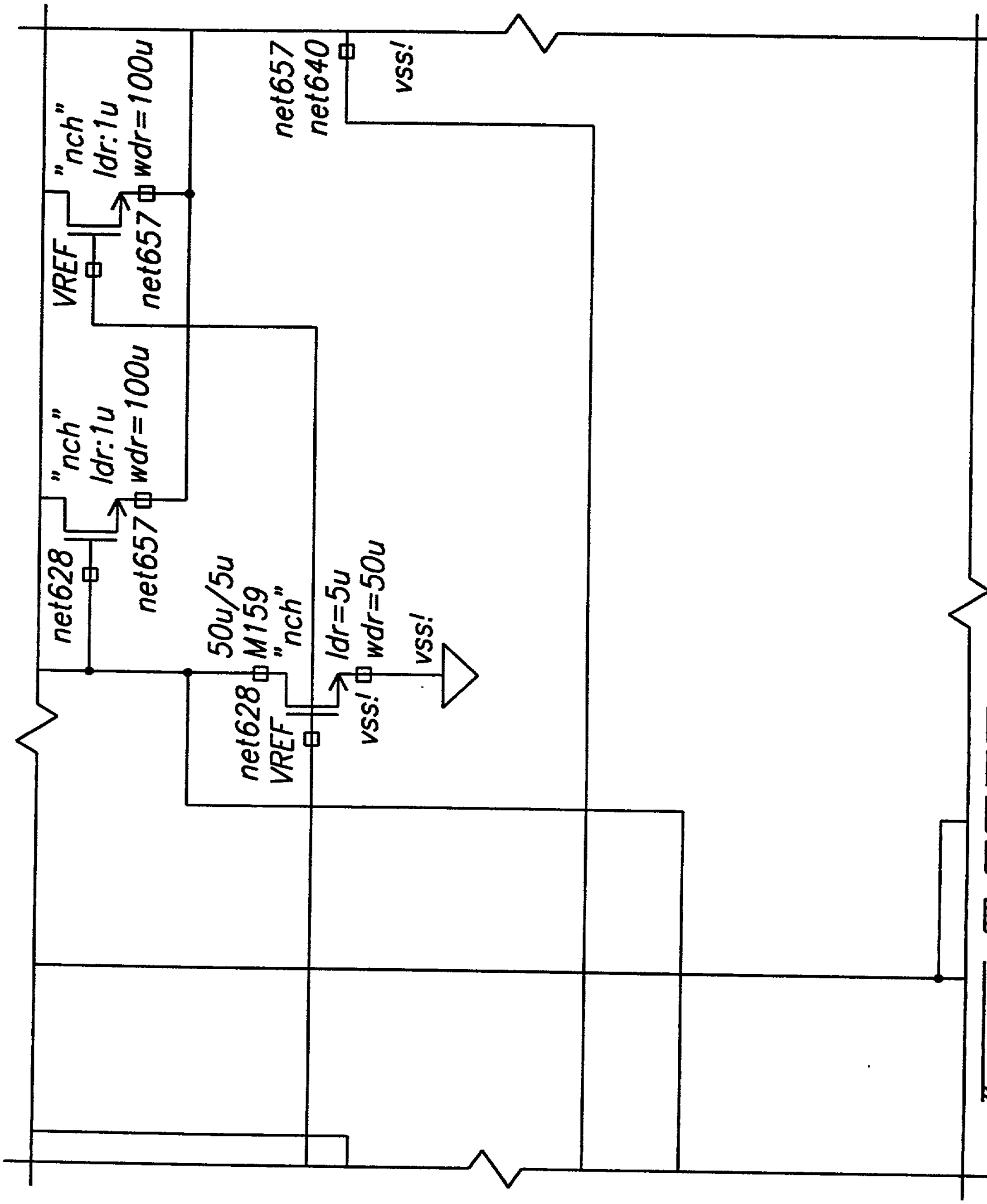

"nch"
ldr:1u
wdr=100u
VREF
net657
"nch"
ldr:1u
wdr=100u
net628
net657
net657
net640
vss!
50u/5u
M159
"nch"
net628
VREF
ldr=5u
wdr=50u
vss!
vss!

FIG 9.06BB

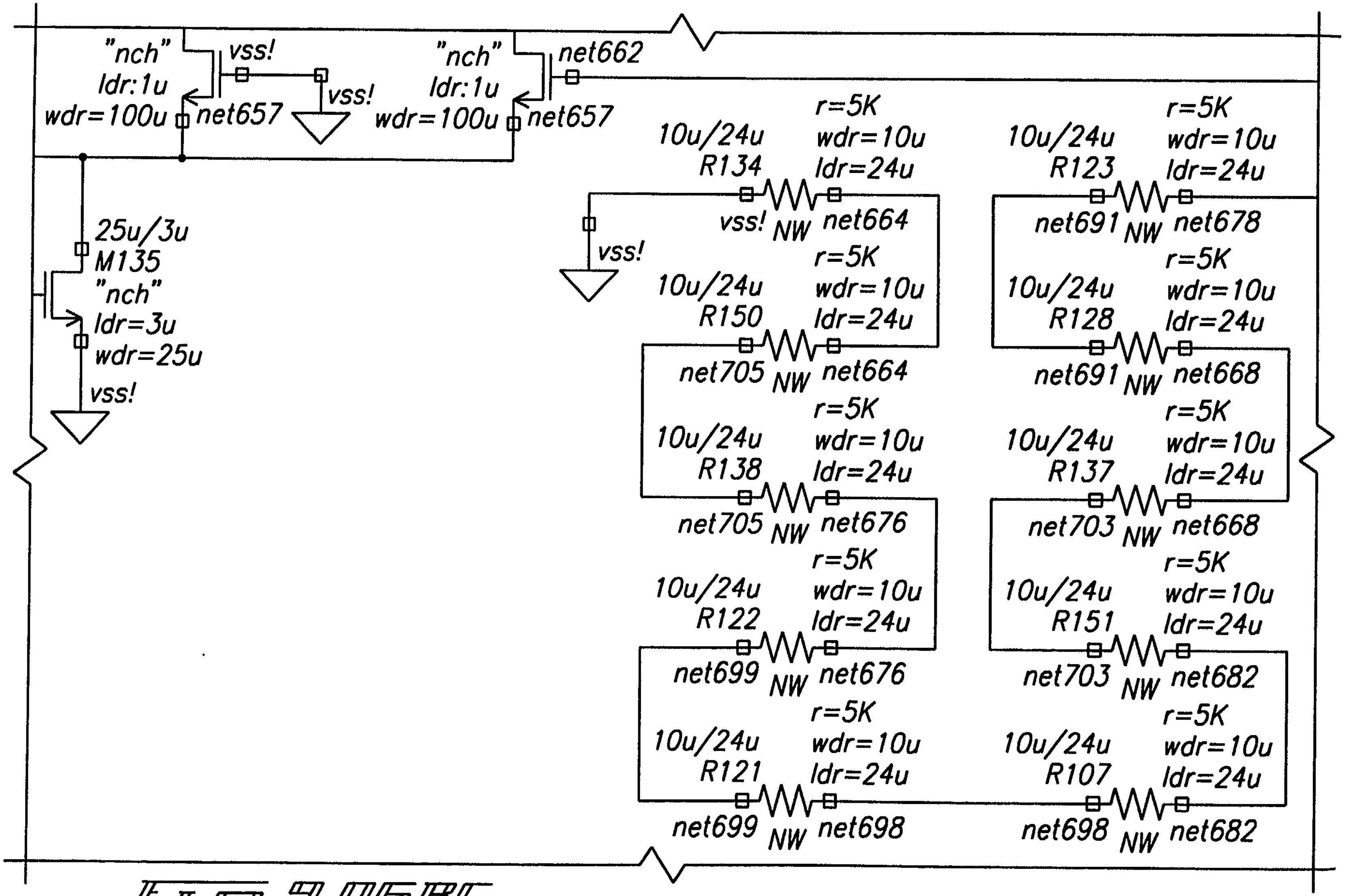

"nch"
ldr:1u
wdr=100u
vss!
net657
vss!
"nch"
ldr:1u
wdr=100u
net662
net657
25u/3u
M135
"nch"
ldr=3u
wdr=25u
vss!
vss!
10u/24u
R134
r=5K
wdr=10u
ldr=24u
vss!
NW
net664
10u/24u
R150
r=5K
wdr=10u
ldr=24u
net705
NW
net664
10u/24u
R138
r=5K
wdr=10u
ldr=24u
net705
NW
net676
10u/24u
R122
r=5K
wdr=10u
ldr=24u
net699
NW
net676
10u/24u
R121
r=5K
wdr=10u
ldr=24u
net699
NW
net698
10u/24u
R123
r=5K
wdr=10u
ldr=24u
net691
NW
net678
10u/24u
R128
r=5K
wdr=10u
ldr=24u
net691
NW
net668
10u/24u
R137
r=5K
wdr=10u
ldr=24u
net703
NW
net668
10u/24u
R151
r=5K
wdr=10u
ldr=24u
net703
NW
net682
10u/24u
R107
r=5K
wdr=10u
ldr=24u
net698
NW
net682

Fig 9.06BC

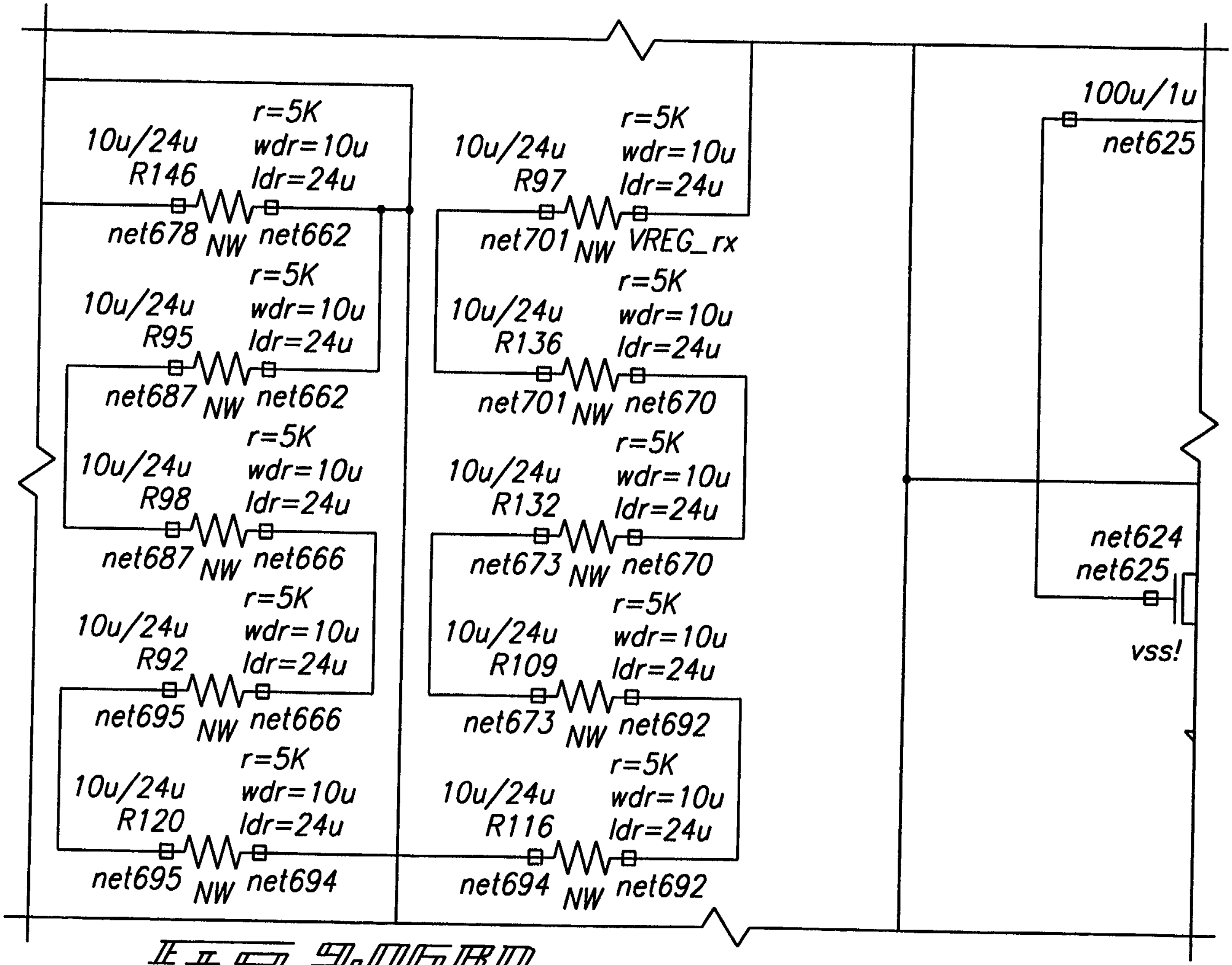

10u/24u
R146
r=5K
wdr=10u
ldr=24u
net678
NW
net662
10u/24u
R95
r=5K
wdr=10u
ldr=24u
net687
NW
net662
10u/24u
R98
r=5K
wdr=10u
ldr=24u
net687
NW
net666
10u/24u
R92
r=5K
wdr=10u
ldr=24u
net695
NW
net666
10u/24u
R120
r=5K
wdr=10u
ldr=24u
net695
NW
net694
10u/24u
R97
r=5K
wdr=10u
ldr=24u
net701
NW
VREG_rx
10u/24u
R136
r=5K
wdr=10u
ldr=24u
net701
NW
net670
10u/24u
R132
r=5K
wdr=10u
ldr=24u
net673
NW
net670
10u/24u
R109
r=5K
wdr=10u
ldr=24u
net673
NW
net692
10u/24u
R116
r=5K
wdr=10u
ldr=24u
net694
NW
net692
100u/1u
net625
net624
net625
vss!

FIG 9.06BD

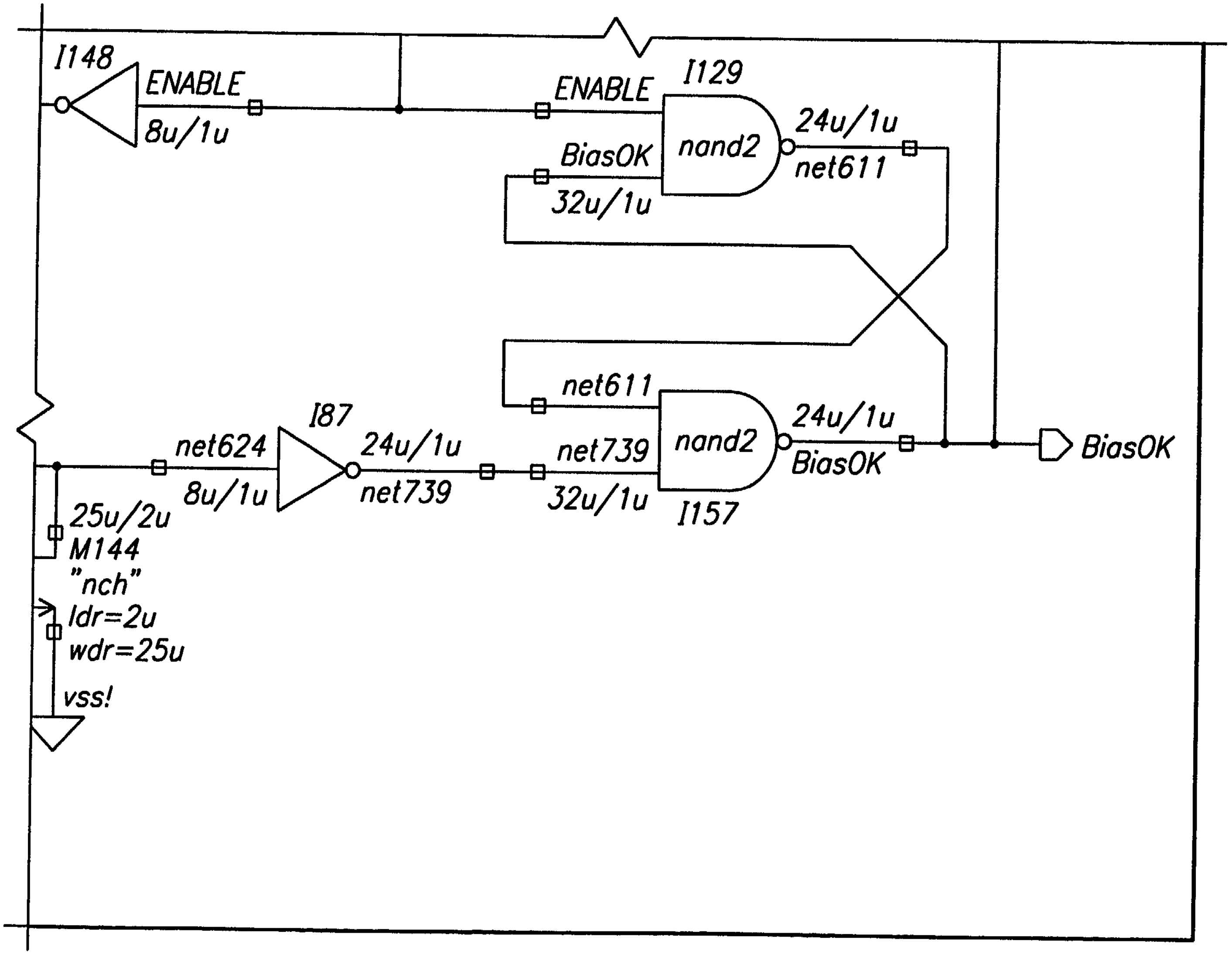

I148
ENABLE
8u/1u
ENABLE
I129
BiasOK
32u/1u
nand2
24u/1u
net611
net611
net739
32u/1u
nand2
24u/1u
BiasOK
I157
BiasOK
net624
8u/1u
I87
24u/1u
net739
25u/2u
M144
"nch"
ldr=2u
wdr=25u
vss!

Fig 9.06BE

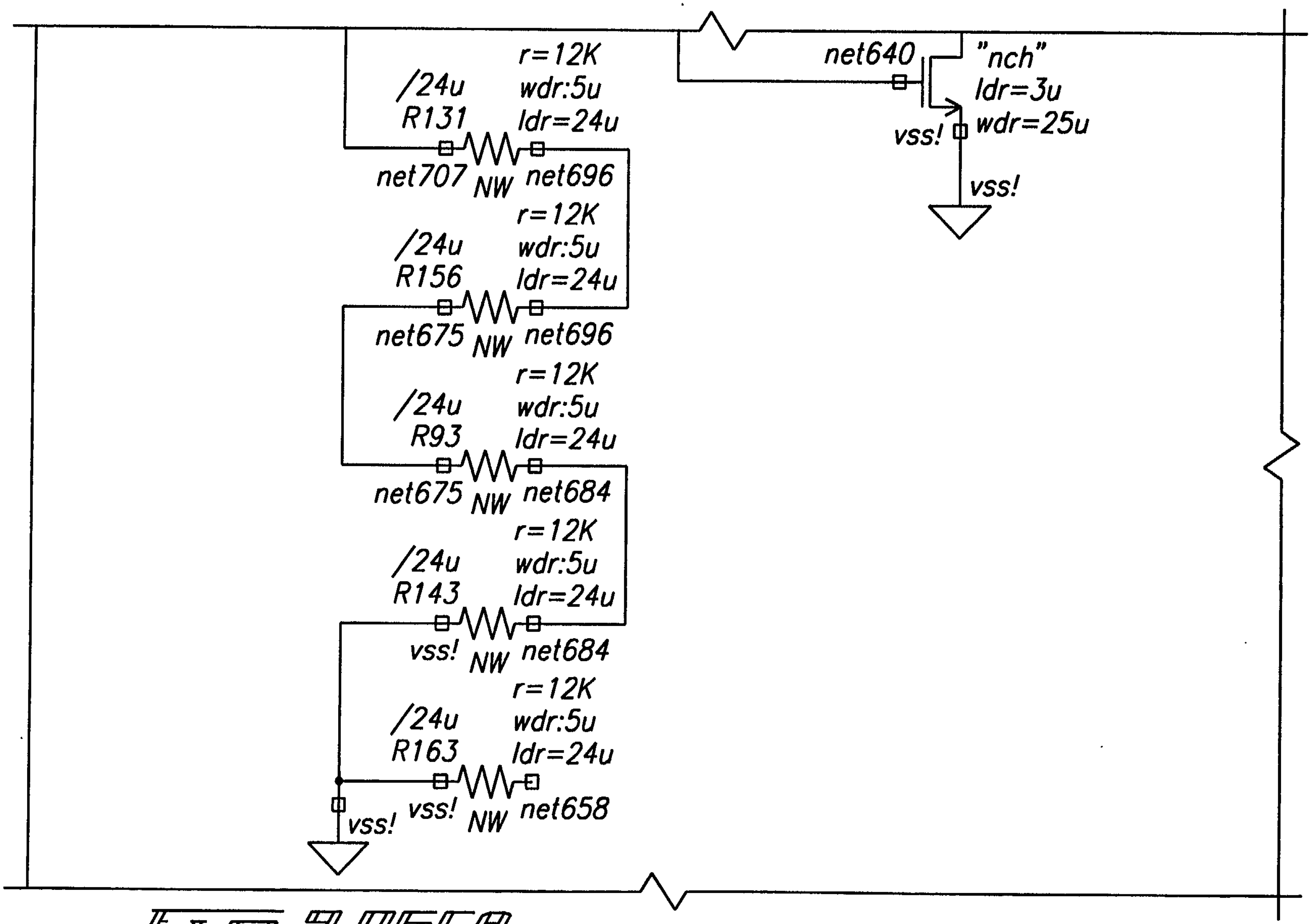

r=12K
wdr:5u
ldr=24u
/24u
R131
net707
NW
net696
r=12K
wdr:5u
ldr=24u
/24u
R156
net675
NW
net696
r=12K
wdr:5u
ldr=24u
/24u
R93
net675
NW
net684
r=12K
wdr:5u
ldr=24u
/24u
R143
vss!
NW
net684
r=12K
wdr:5u
ldr=24u
/24u
R163
vss!
NW
net658
vss!
net640
"nch"
ldr=3u
wdr=25u
vss!
vss!

Fig 9.06CA

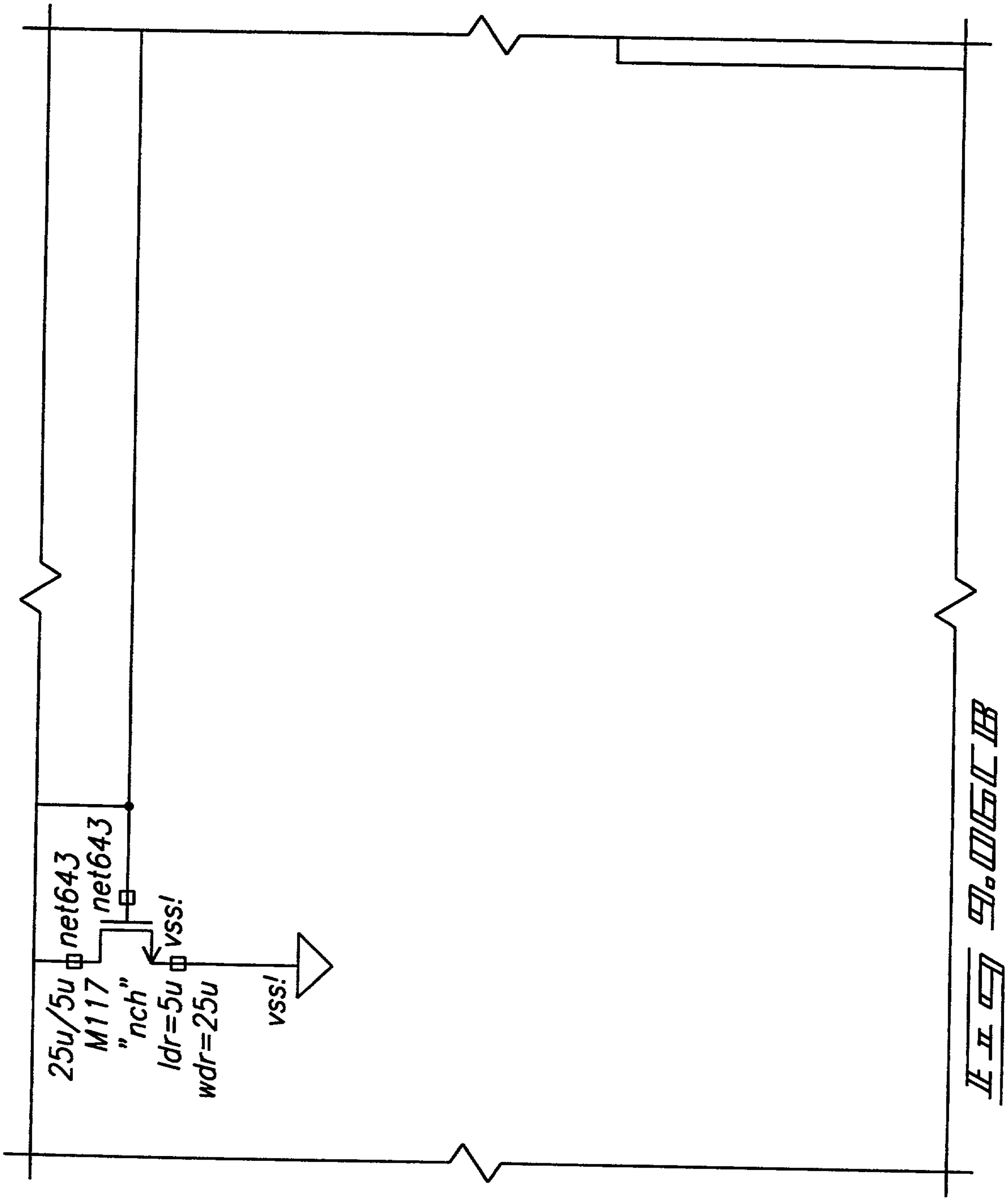


Fig 9.06CB

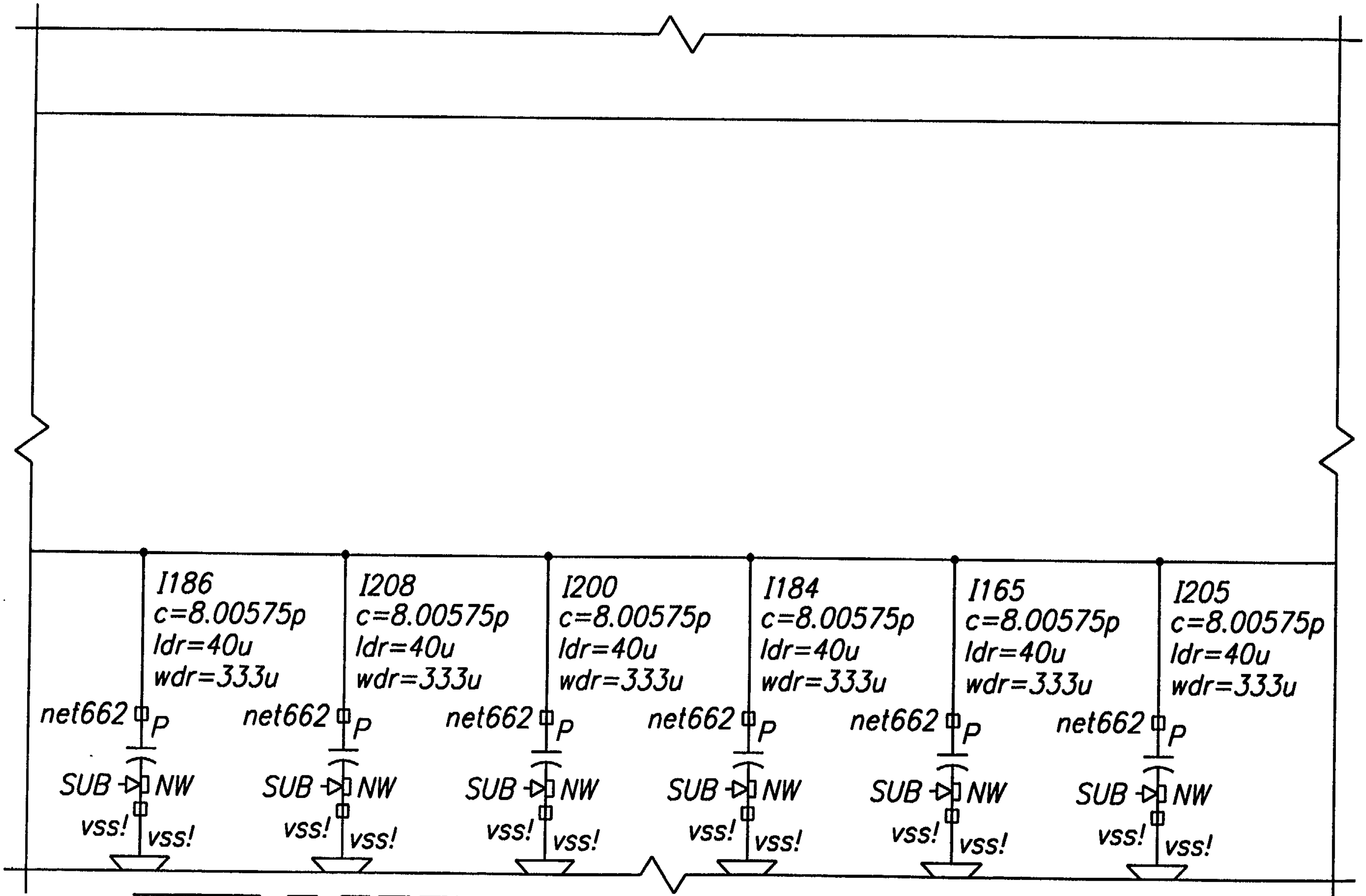
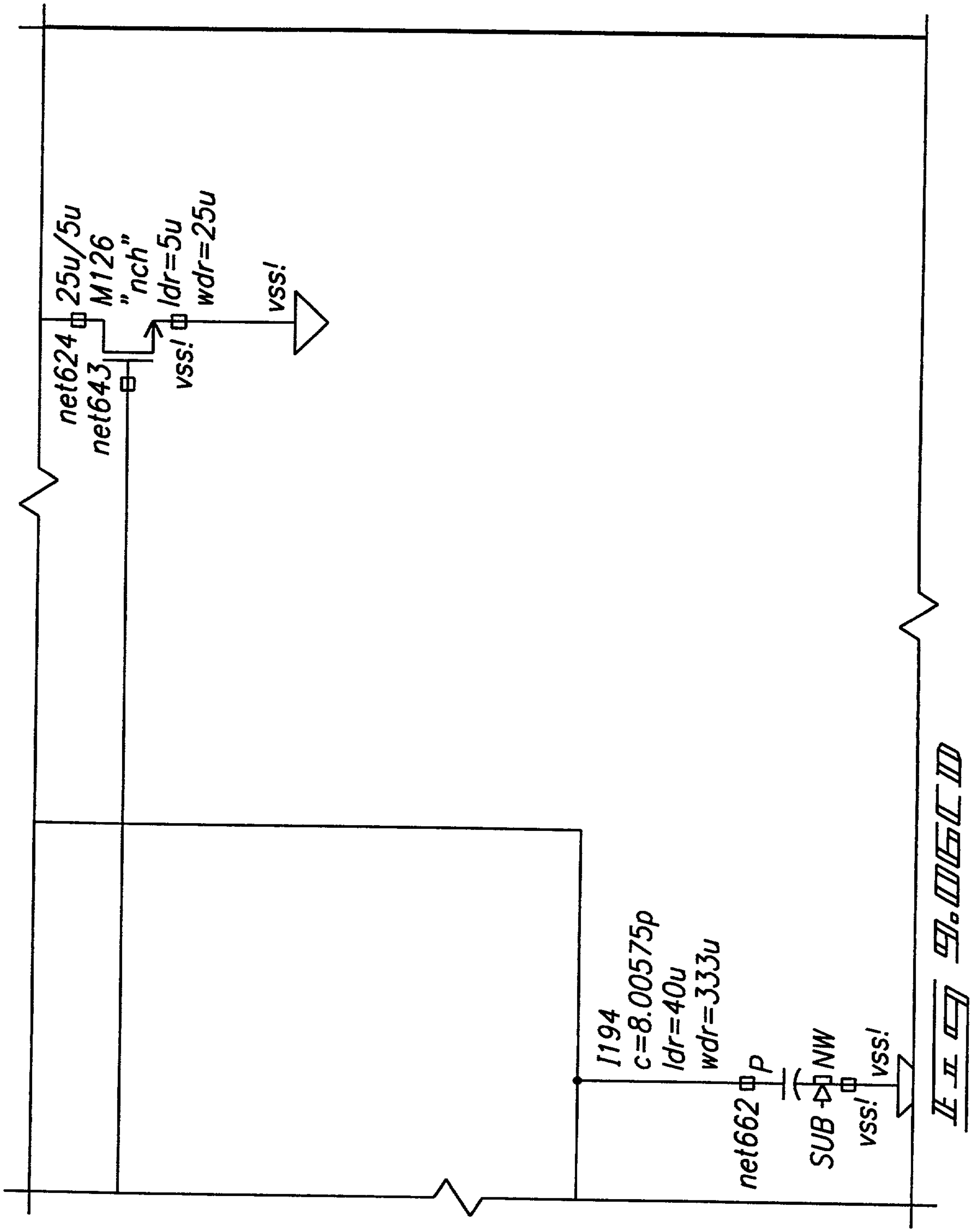

I186
c=8.00575p
ldr=40u
wdr=333u
net662
P
SUB
NW
vss!
vss!
I208
c=8.00575p
ldr=40u
wdr=333u
net662
P
SUB
NW
vss!
vss!
I200
c=8.00575p
ldr=40u
wdr=333u
net662
P
SUB
NW
vss!
vss!
I184
c=8.00575p
ldr=40u
wdr=333u
net662
P
SUB
NW
vss!
vss!
I165
c=8.00575p
ldr=40u
wdr=333u
net662
P
SUB
NW
vss!
vss!
I205
c=8.00575p
ldr=40u
wdr=333u
net662
P
SUB
NW
vss!
vss!

Fig 9.06CC



net624
net643
25u/5u
M126
"nch"
ldr=5u
wdr=25u
vss!
vss!
I194
c=8.00575p
ldr=40u
wdr=333u
net662
P
SUB
NW
vss!
vss!

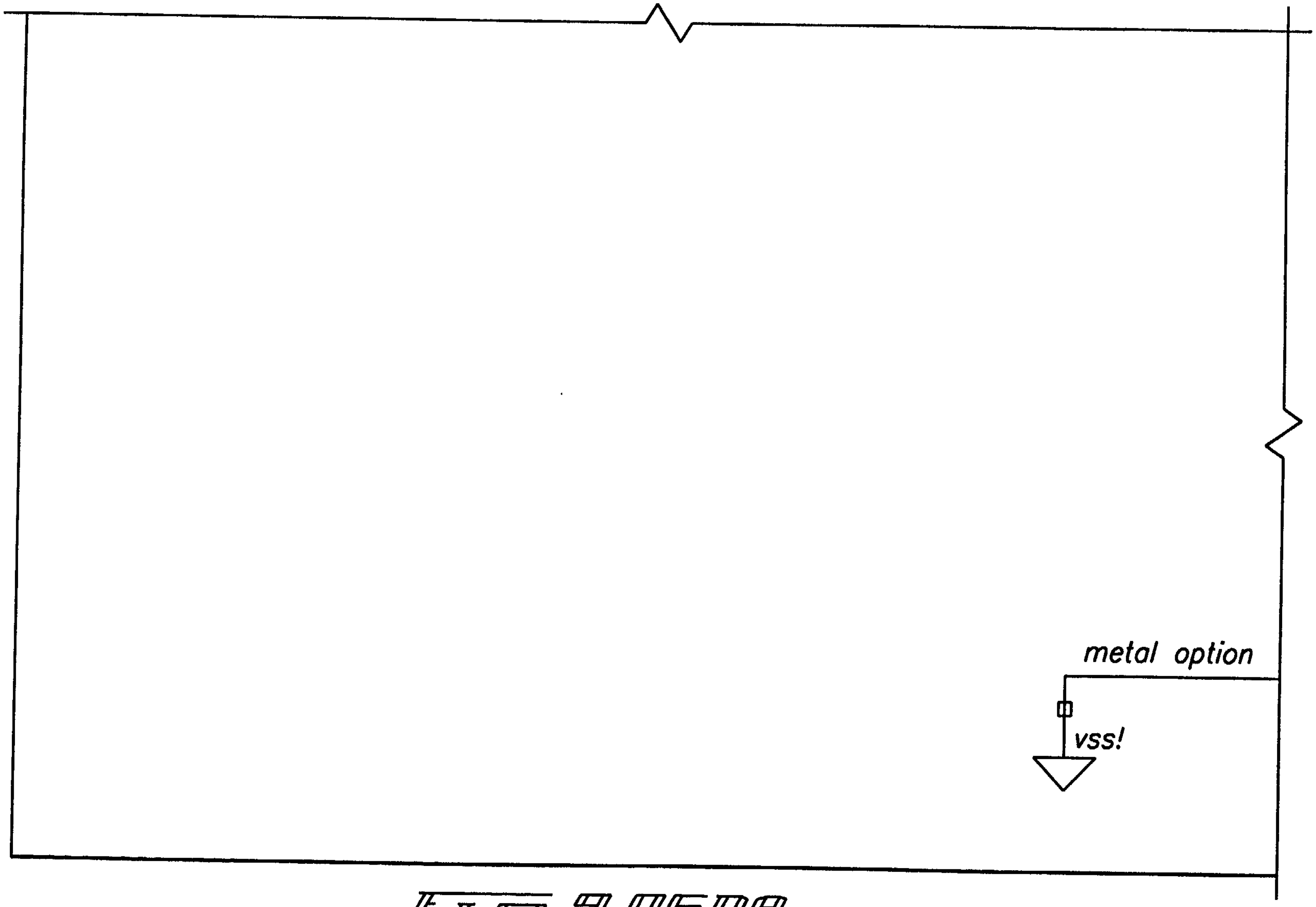


FIG 9.06DA

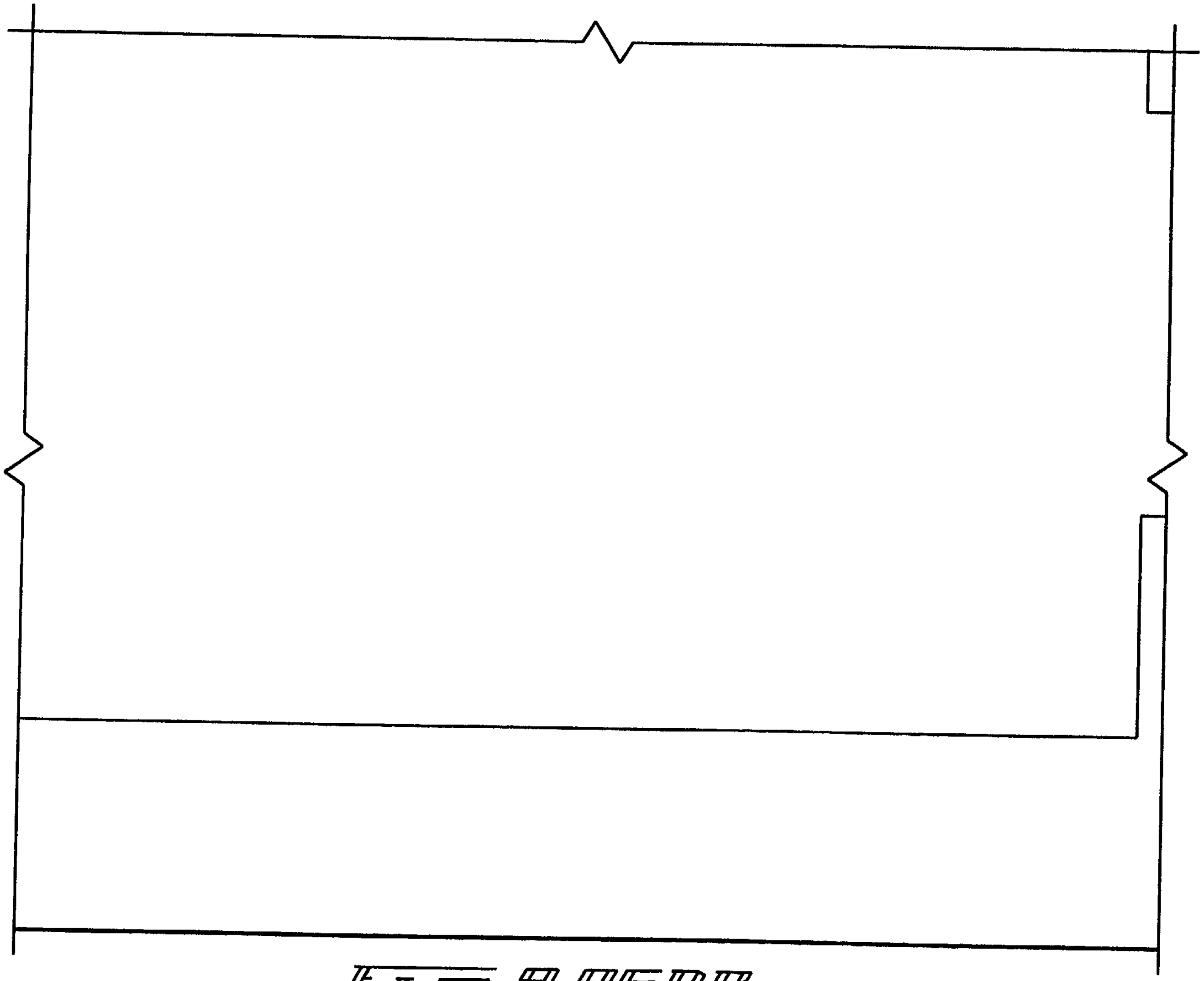


Fig 9.06DB

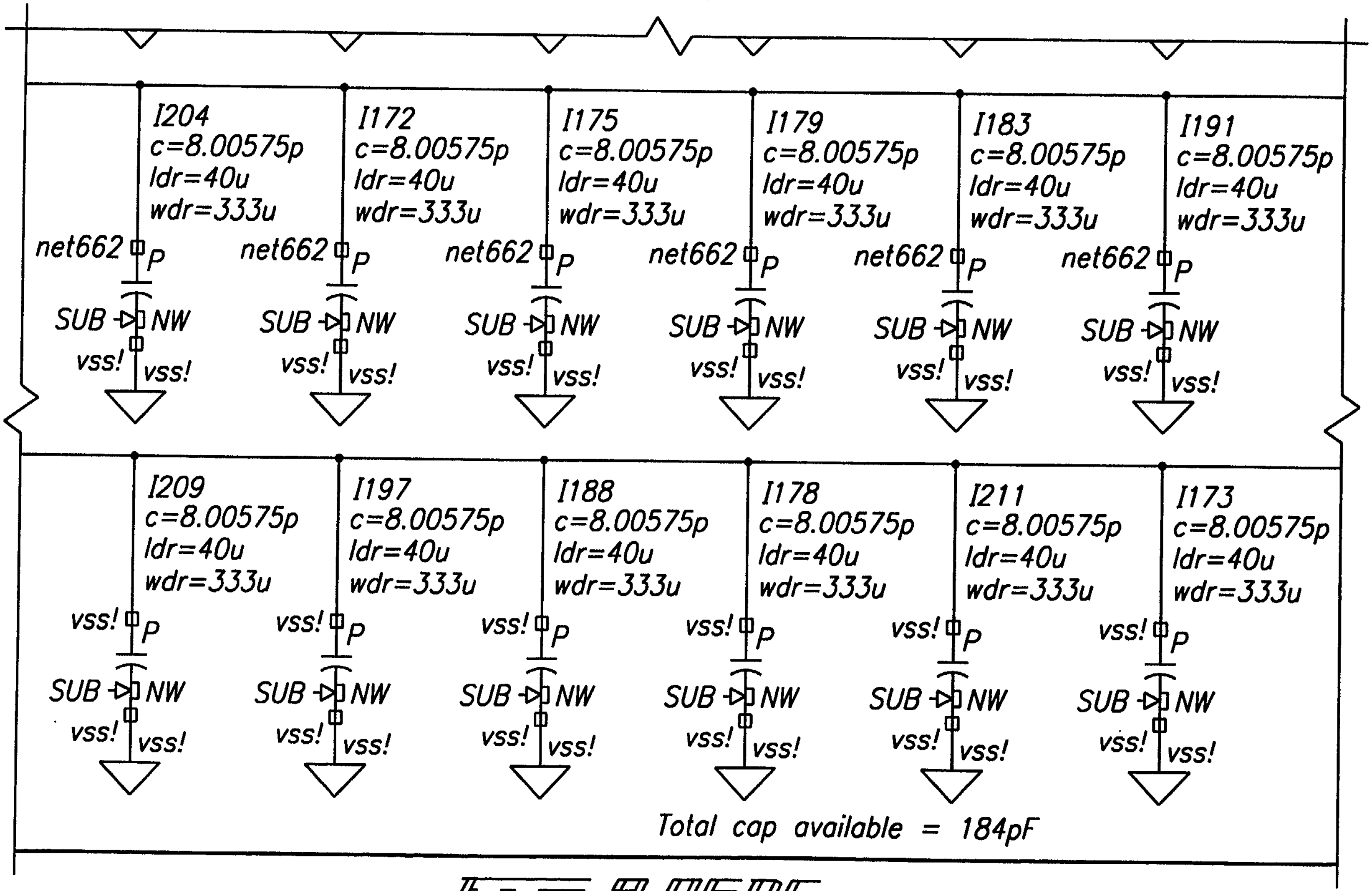

I204
c=8.00575p
ldr=40u
wdr=333u
net662
P
SUB
NW
vss!
vss!
I172
c=8.00575p
ldr=40u
wdr=333u
net662
P
SUB
NW
vss!
vss!
I175
c=8.00575p
ldr=40u
wdr=333u
net662
P
SUB
NW
vss!
vss!
I179
c=8.00575p
ldr=40u
wdr=333u
net662
P
SUB
NW
vss!
vss!
I183
c=8.00575p
ldr=40u
wdr=333u
net662
P
SUB
NW
vss!
vss!
I191
c=8.00575p
ldr=40u
wdr=333u
net662
P
SUB
NW
vss!
vss!
I209
c=8.00575p
ldr=40u
wdr=333u
vss!
P
SUB
NW
vss!
vss!
I197
c=8.00575p
ldr=40u
wdr=333u
vss!
P
SUB
NW
vss!
vss!
I188
c=8.00575p
ldr=40u
wdr=333u
vss!
P
SUB
NW
vss!
vss!
I178
c=8.00575p
ldr=40u
wdr=333u
vss!
P
SUB
NW
vss!
vss!
I211
c=8.00575p
ldr=40u
wdr=333u
vss!
P
SUB
NW
vss!
vss!
I173
c=8.00575p
ldr=40u
wdr=333u
vss!
P
SUB
NW
vss!
vss!
Total cap available = 184pF

Fig 9.06DC

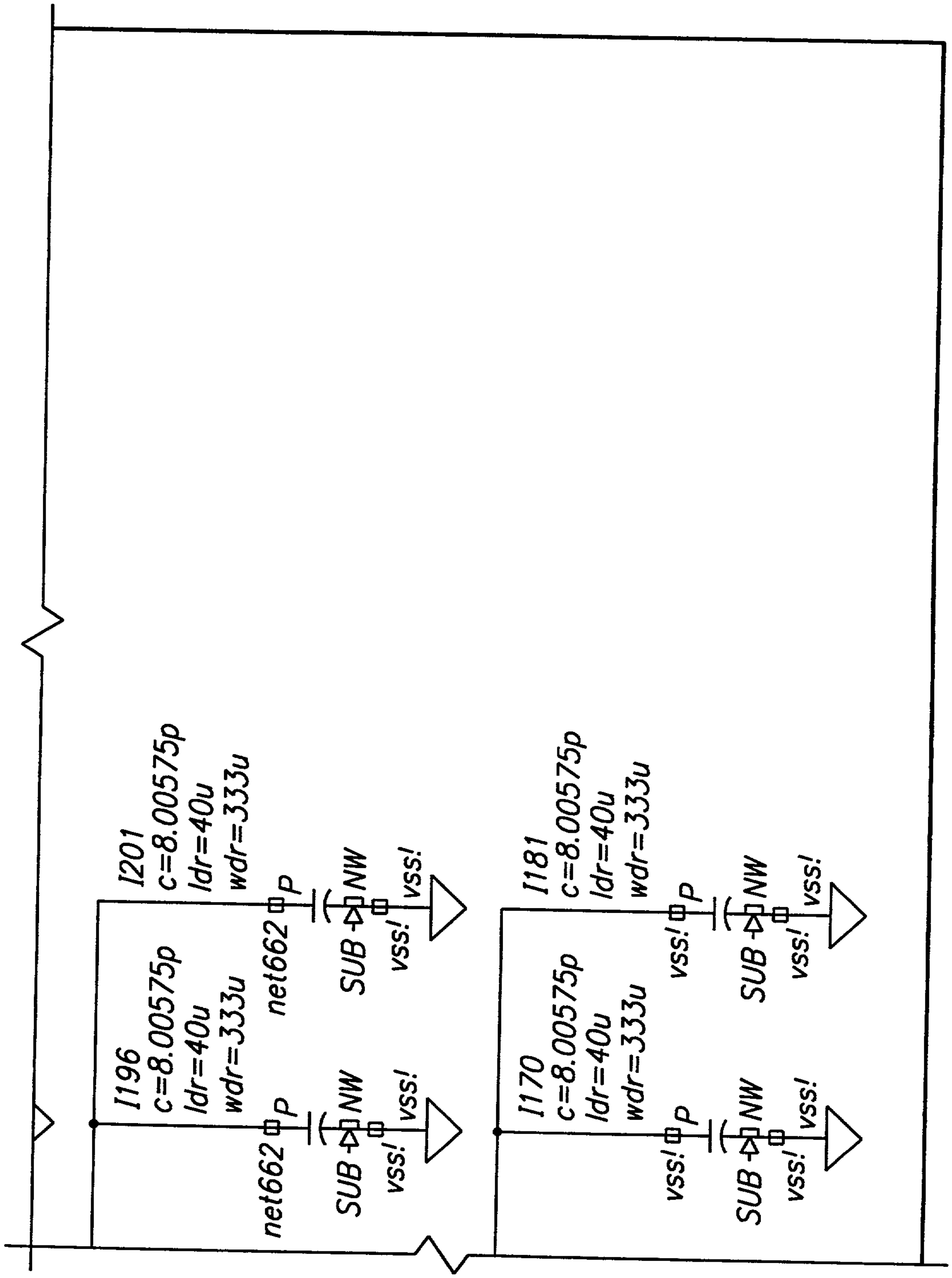

I201
c=8.00575p
ldr=40u
wdr=333u
P
NW
vss!
net662
SUB
vss!
I196
c=8.00575p
ldr=40u
wdr=333u
P
NW
vss!
net662
SUB
vss!
I181
c=8.00575p
ldr=40u
wdr=333u
P
NW
vss!
vss!
SUB
vss!
I170
c=8.00575p
ldr=40u
wdr=333u
P
NW
vss!
vss!
SUB
vss!

FIG 9.06DD

9.07AA	9.07AB	9.07AC	9.07AD	9.07AE	9.07AF	9.07AG	9.07AH	9.07AI
9.07BA	9.07BB	9.07BC	9.07BD	9.07BE	9.07BF	9.07BG	9.07BH	9.07BI
9.07CA	9.07CB	9.07CC	9.07CD	9.07CE	9.07CF	9.07CG	9.07CH	
9.07DA	9.07DB	9.07DC	9.07DD	9.07DE	9.07DF	9.07DG		
9.07EA	9.07EB	9.07EC	9.07ED	9.07EE	9.07EF	9.07EG		

Fig 9.07

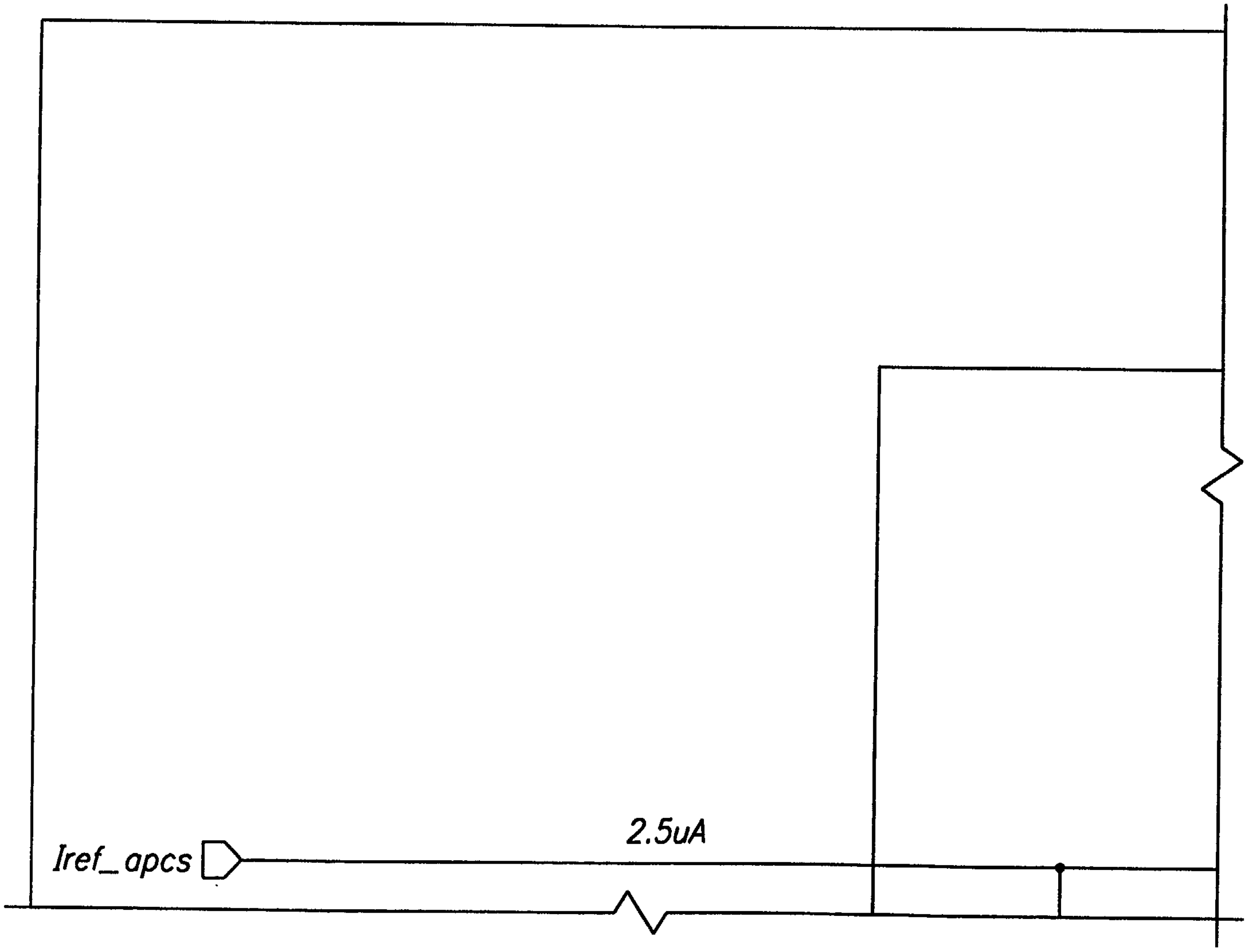


Fig 9.01AA

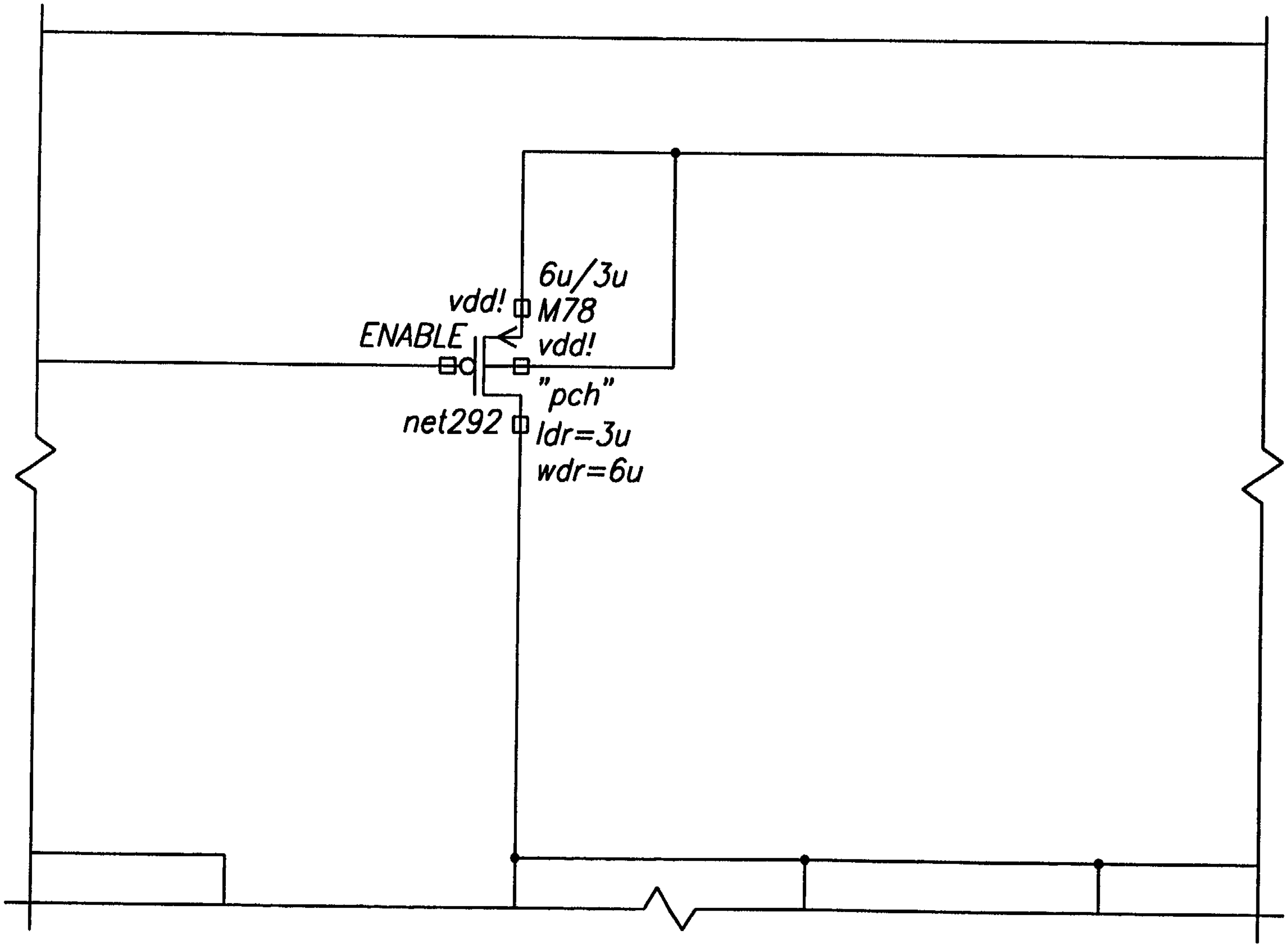


FIG 9.01AB

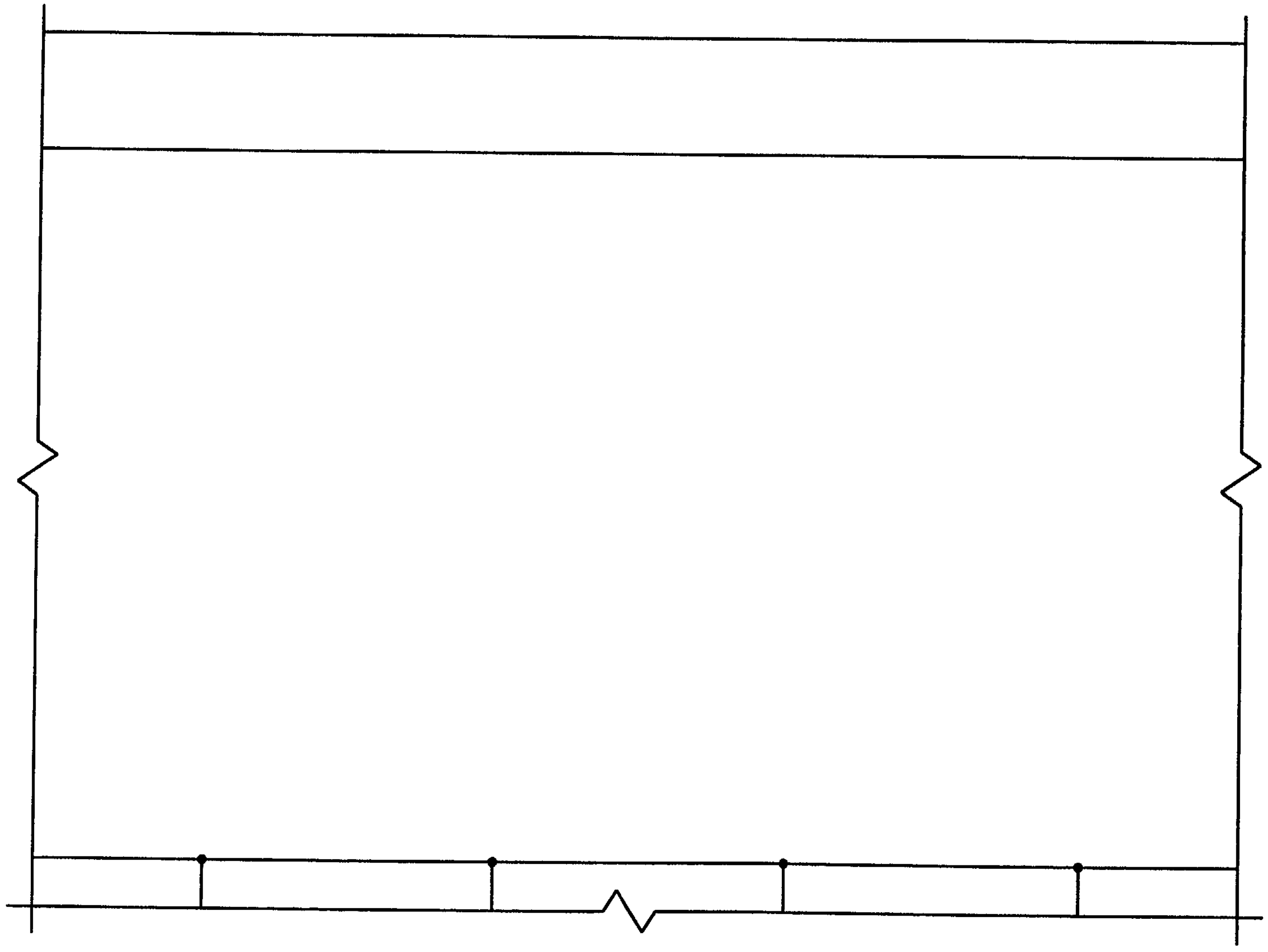


Fig 9.01AC

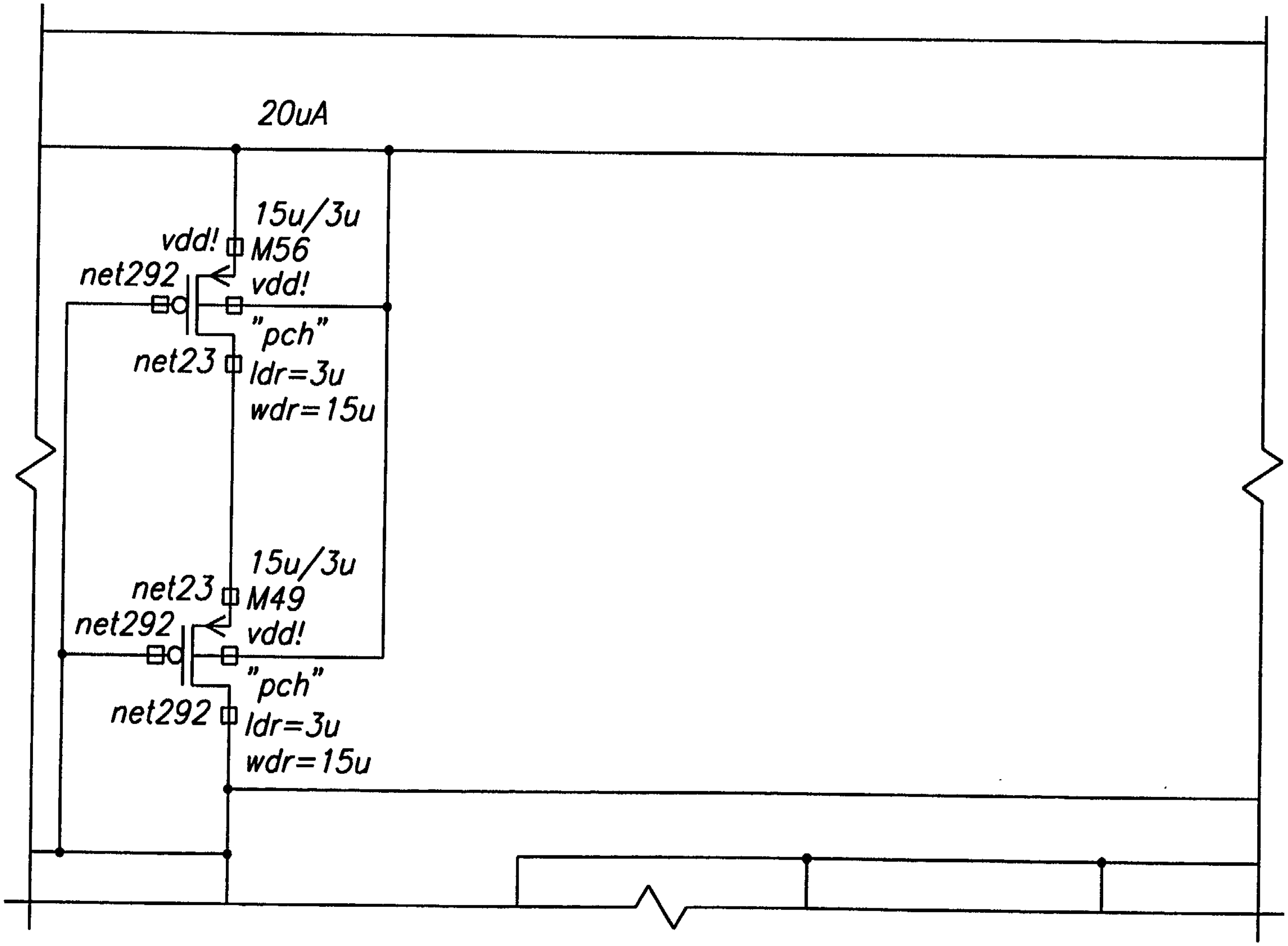

20uA
15u/3u
M56
vdd!
vdd!
net292
"pch"
net23
ldr=3u
wdr=15u
15u/3u
net23
M49
net292
vdd!
"pch"
net292
ldr=3u
wdr=15u

Fig 9.01AD

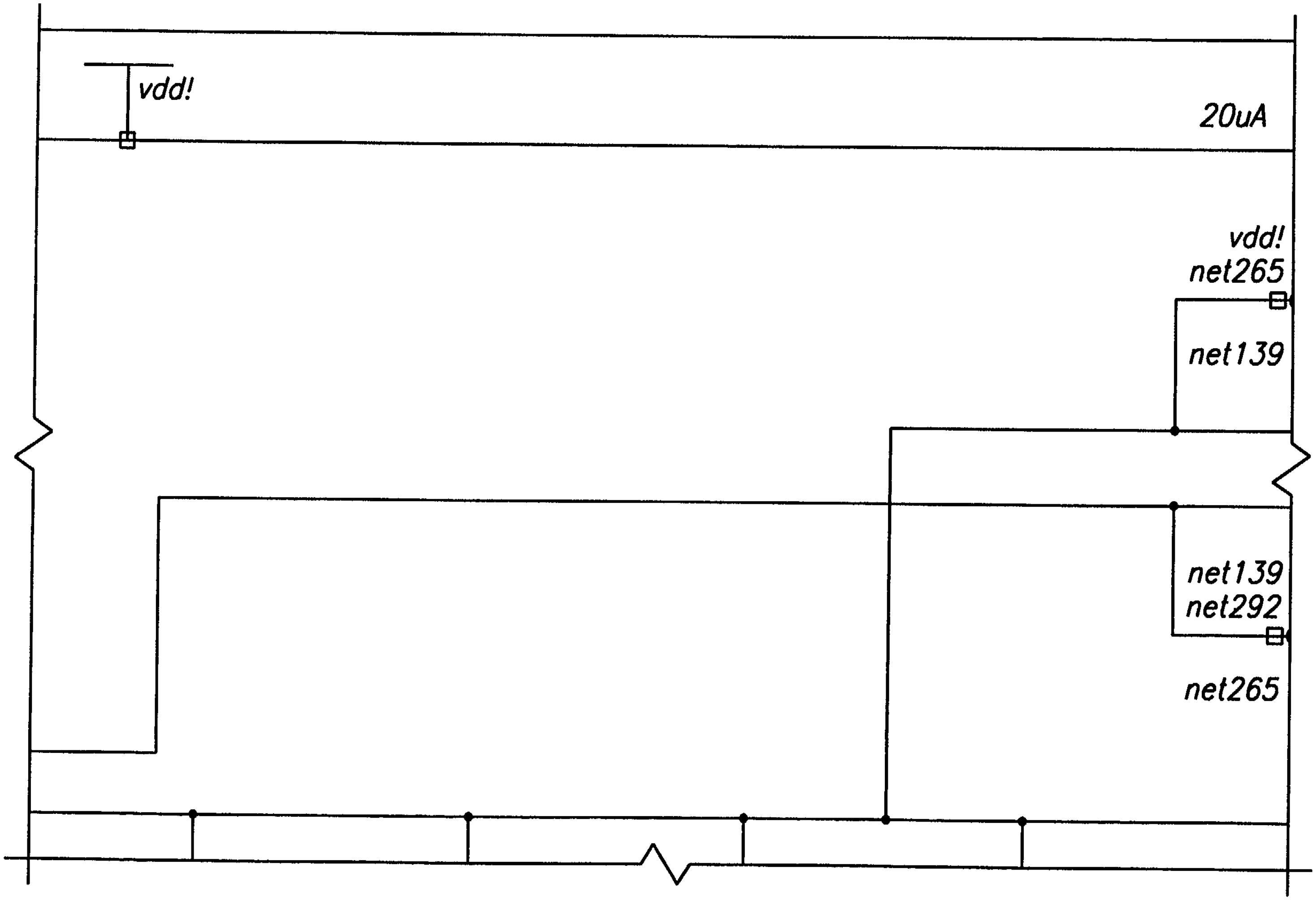


Fig 9.01AE

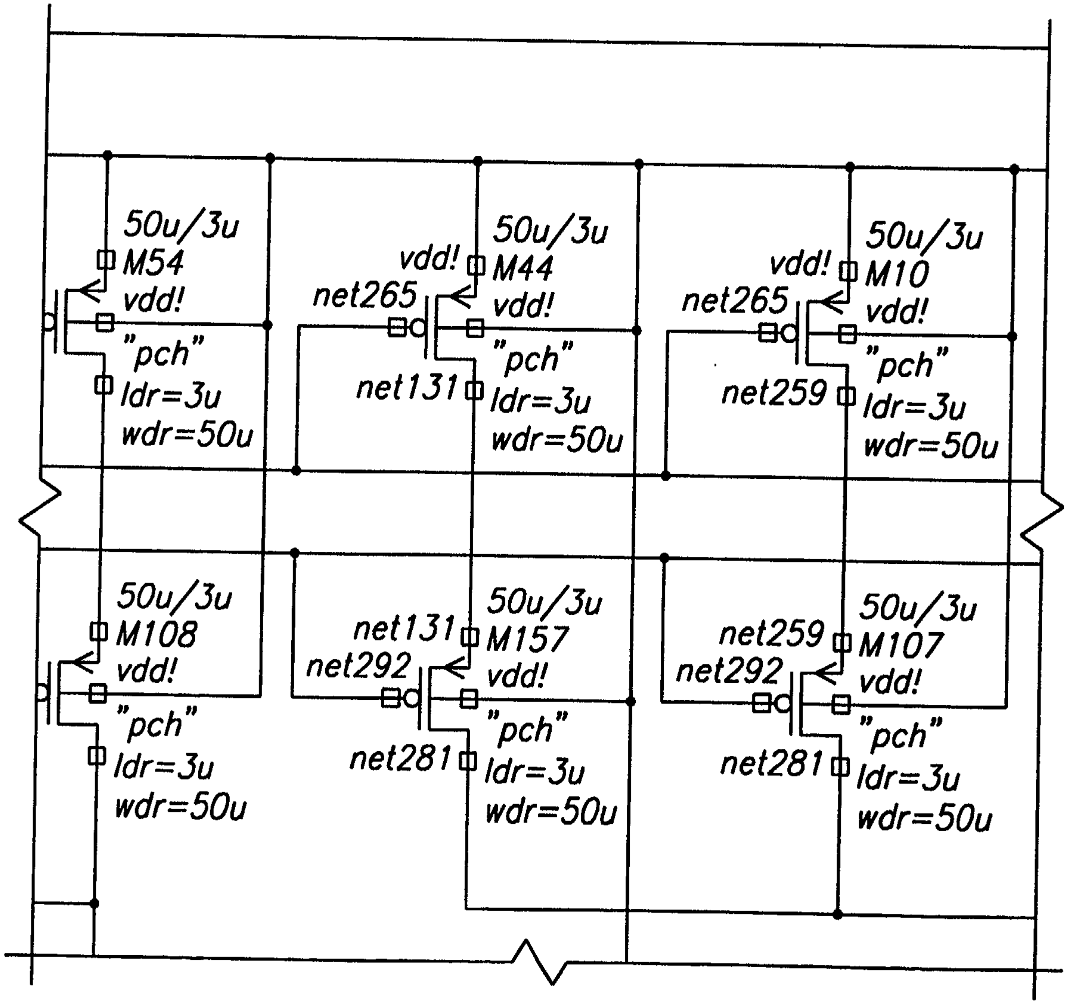

50u/3u
M54
vdd!
"pch"
ldr=3u
wdr=50u
vdd!
net265
50u/3u
M44
vdd!
"pch"
net131
ldr=3u
wdr=50u
vdd!
net265
50u/3u
M10
vdd!
"pch"
net259
ldr=3u
wdr=50u
50u/3u
M108
vdd!
"pch"
ldr=3u
wdr=50u
net131
net292
50u/3u
M157
vdd!
"pch"
net281
ldr=3u
wdr=50u
net259
net292
50u/3u
M107
vdd!
"pch"
net281
ldr=3u
wdr=50u

Fig 9.07AF

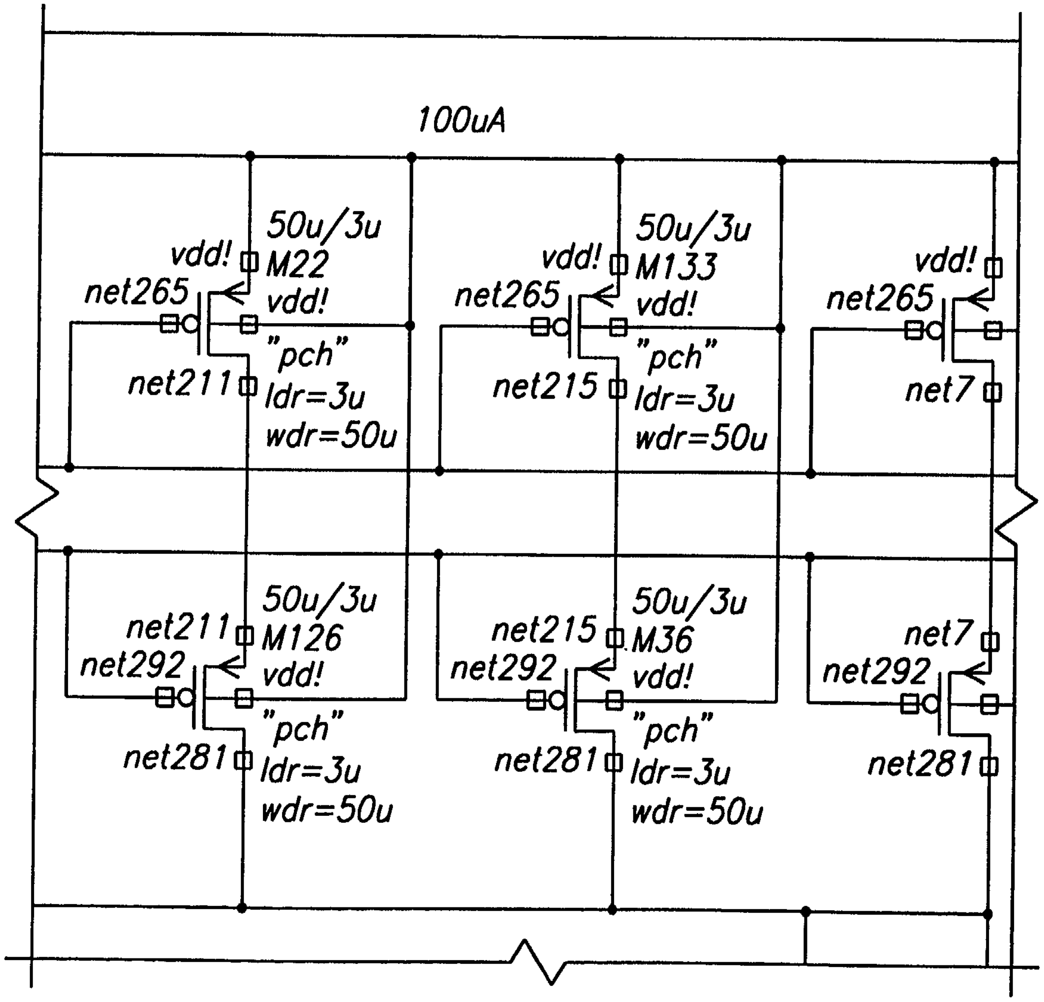

100uA
50u/3u
vdd!
M22
net265
vdd!
"pch"
net211
ldr=3u
wdr=50u
50u/3u
vdd!
M133
net265
vdd!
"pch"
net215
ldr=3u
wdr=50u
vdd!
net265
net7
50u/3u
net211
M126
net292
vdd!
"pch"
net281
ldr=3u
wdr=50u
50u/3u
net215
M36
net292
vdd!
"pch"
net281
ldr=3u
wdr=50u
net7
net292
net281

Fig 9.07AG

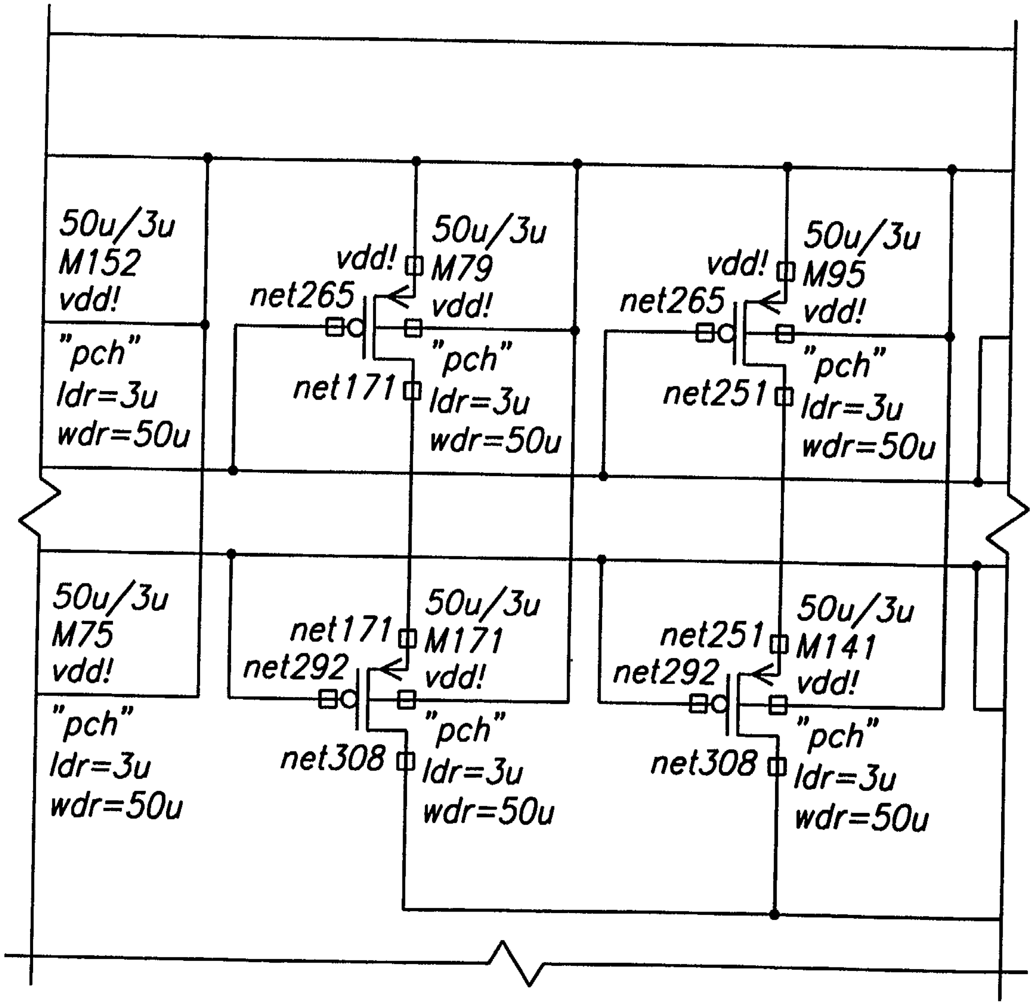

50u/3u
M152
vdd!
"pch"
ldr=3u
wdr=50u
vdd!
net265
M79
50u/3u
vdd!
net171
"pch"
ldr=3u
wdr=50u
vdd!
net265
50u/3u
M95
vdd!
net251
"pch"
ldr=3u
wdr=50u
50u/3u
M75
vdd!
"pch"
ldr=3u
wdr=50u
net171
net292
50u/3u
M171
vdd!
net308
"pch"
ldr=3u
wdr=50u
net251
net292
50u/3u
M141
vdd!
net308
"pch"
ldr=3u
wdr=50u

FIG 9.07AH

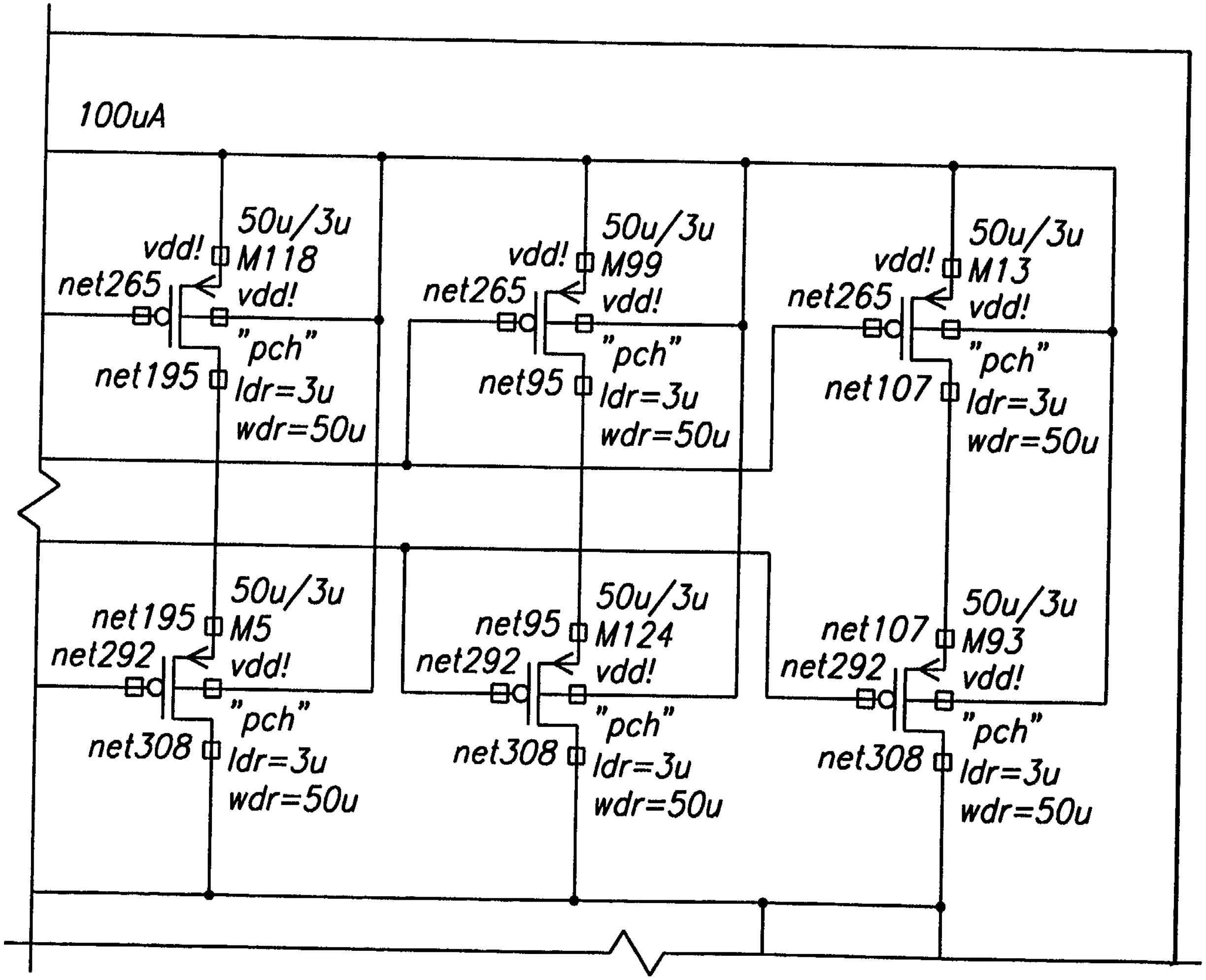

100uA
vdd!
M118
50u/3u
net265
vdd!
"pch"
net195
ldr=3u
wdr=50u
vdd!
M99
50u/3u
net265
vdd!
"pch"
net95
ldr=3u
wdr=50u
vdd!
M13
50u/3u
net265
vdd!
"pch"
net107
ldr=3u
wdr=50u
net195
M5
50u/3u
net292
vdd!
"pch"
net308
ldr=3u
wdr=50u
net95
M124
50u/3u
net292
vdd!
"pch"
net308
ldr=3u
wdr=50u
net107
M93
50u/3u
net292
vdd!
"pch"
net308
ldr=3u
wdr=50u

Fig. 9.01AI

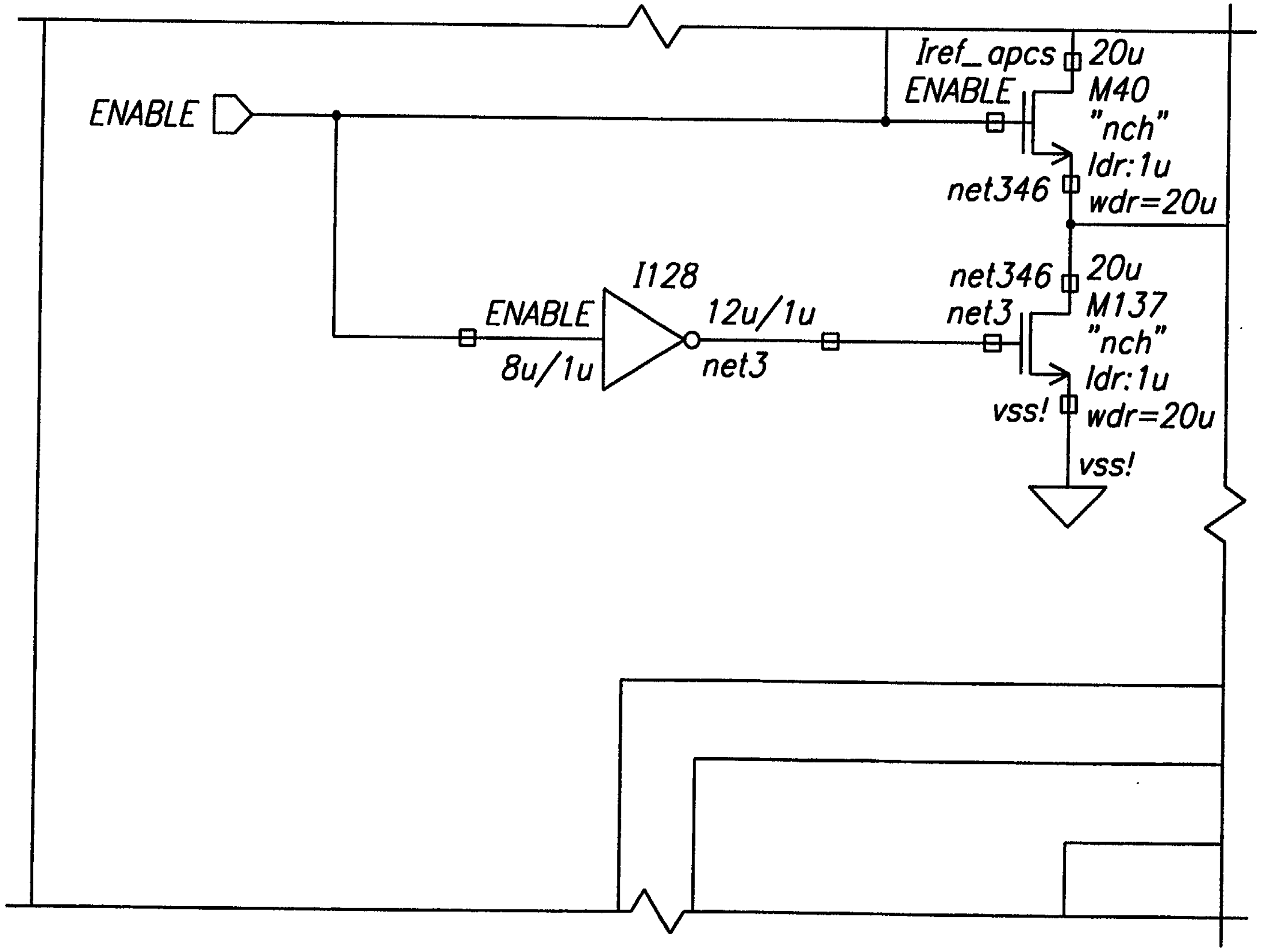

ENABLE
Iref_apcs
ENABLE
20u
M40
"nch"
ldr:1u
wdr=20u
net346
net346
net3
20u
M137
"nch"
ldr:1u
wdr=20u
vss!
vss!
I128
ENABLE
8u/1u
12u/1u
net3

Fig 9.01BA

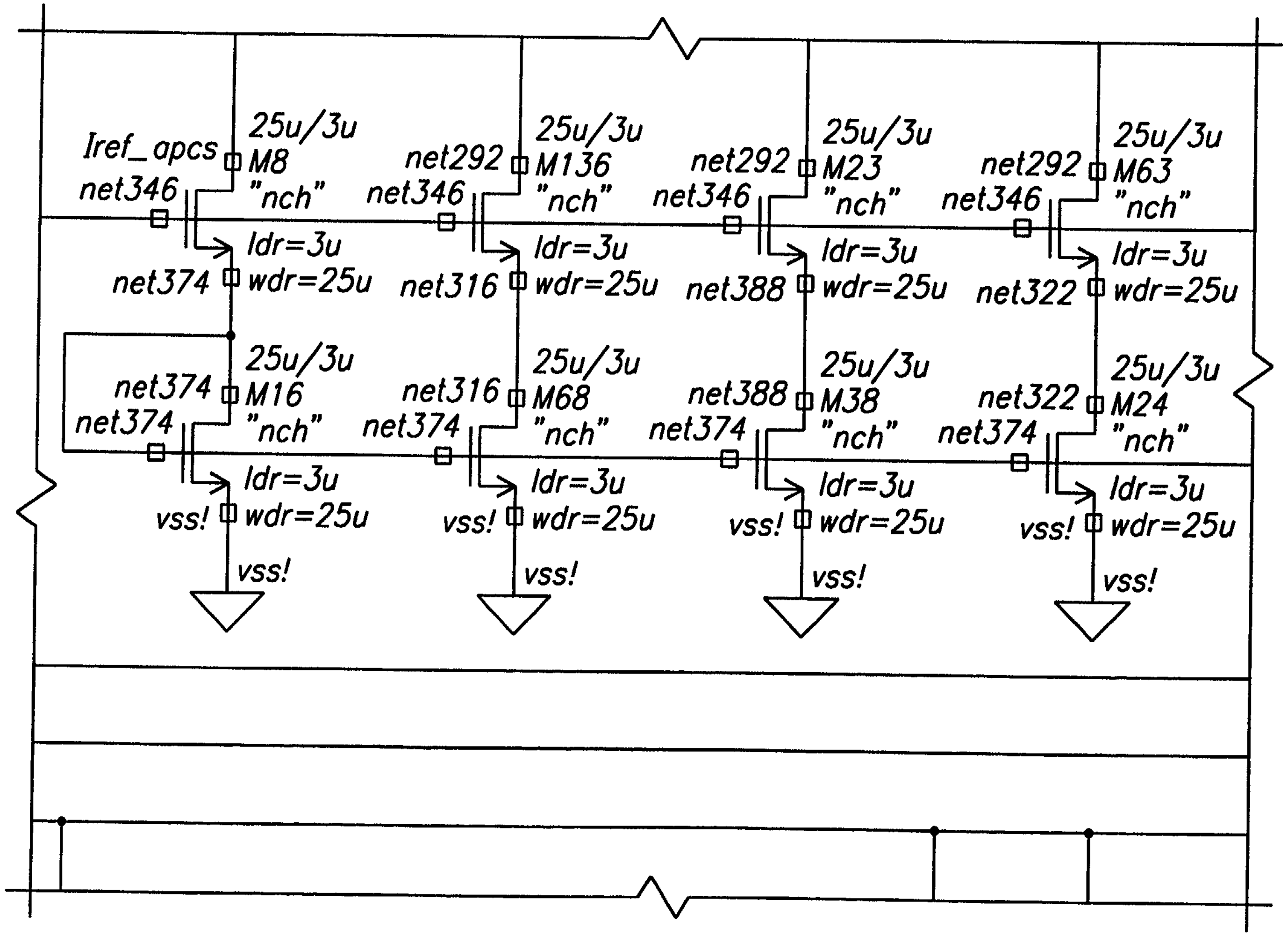

Iref_apcs
net346
25u/3u
M8
"nch"
ldr=3u
net374
wdr=25u
net374
net374
25u/3u
M16
"nch"
ldr=3u
vss!
wdr=25u
vss!
net292
net346
25u/3u
M136
"nch"
ldr=3u
net316
wdr=25u
net316
net374
25u/3u
M68
"nch"
ldr=3u
vss!
wdr=25u
vss!
net292
net346
25u/3u
M23
"nch"
ldr=3u
net388
wdr=25u
net388
net374
25u/3u
M38
"nch"
ldr=3u
vss!
wdr=25u
vss!
net292
net346
25u/3u
M63
"nch"
ldr=3u
net322
wdr=25u
net322
net374
25u/3u
M24
"nch"
ldr=3u
vss!
wdr=25u
vss!

Fig 9.07BB

2638/3273

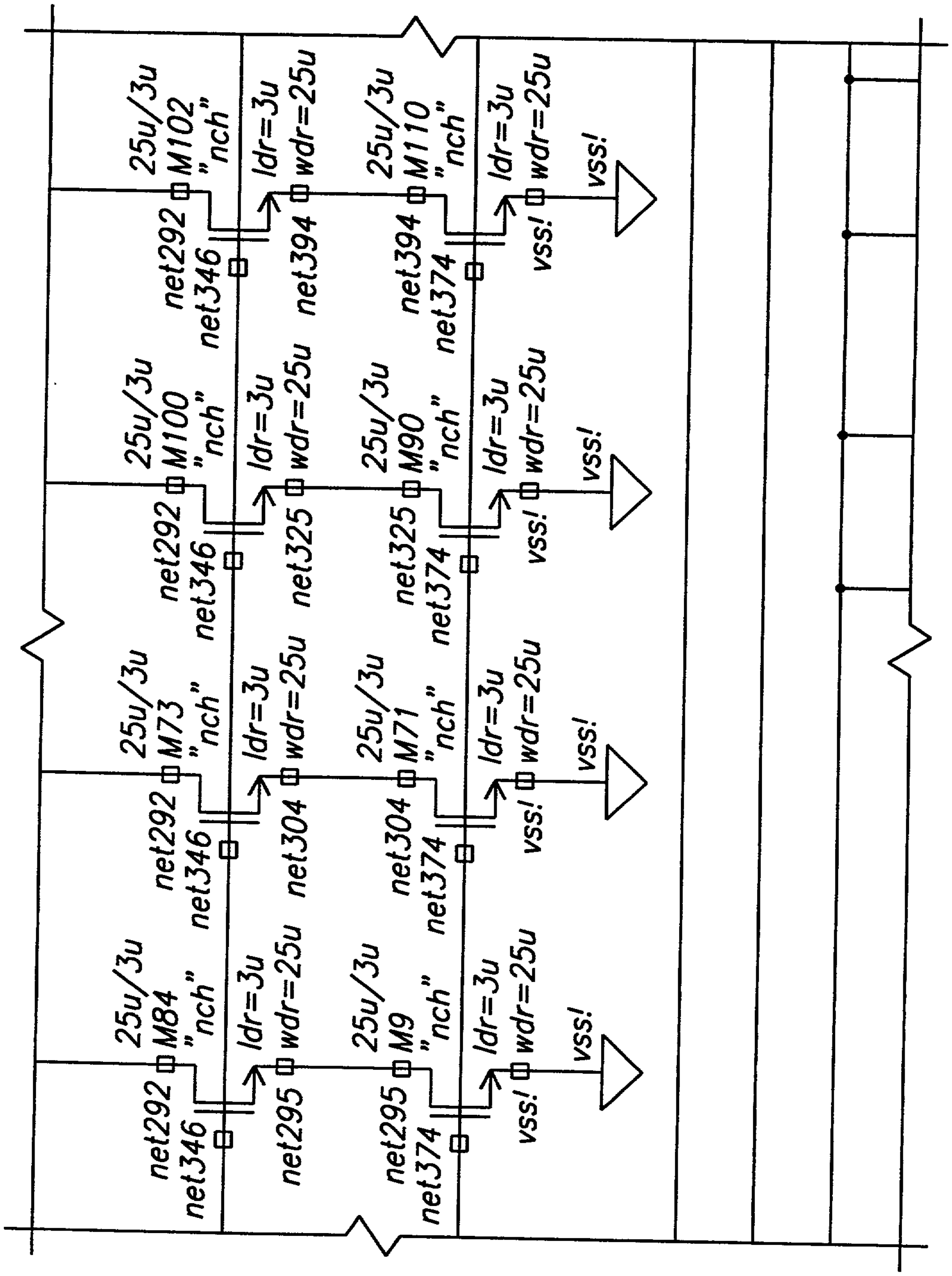


Fig 9.07BC

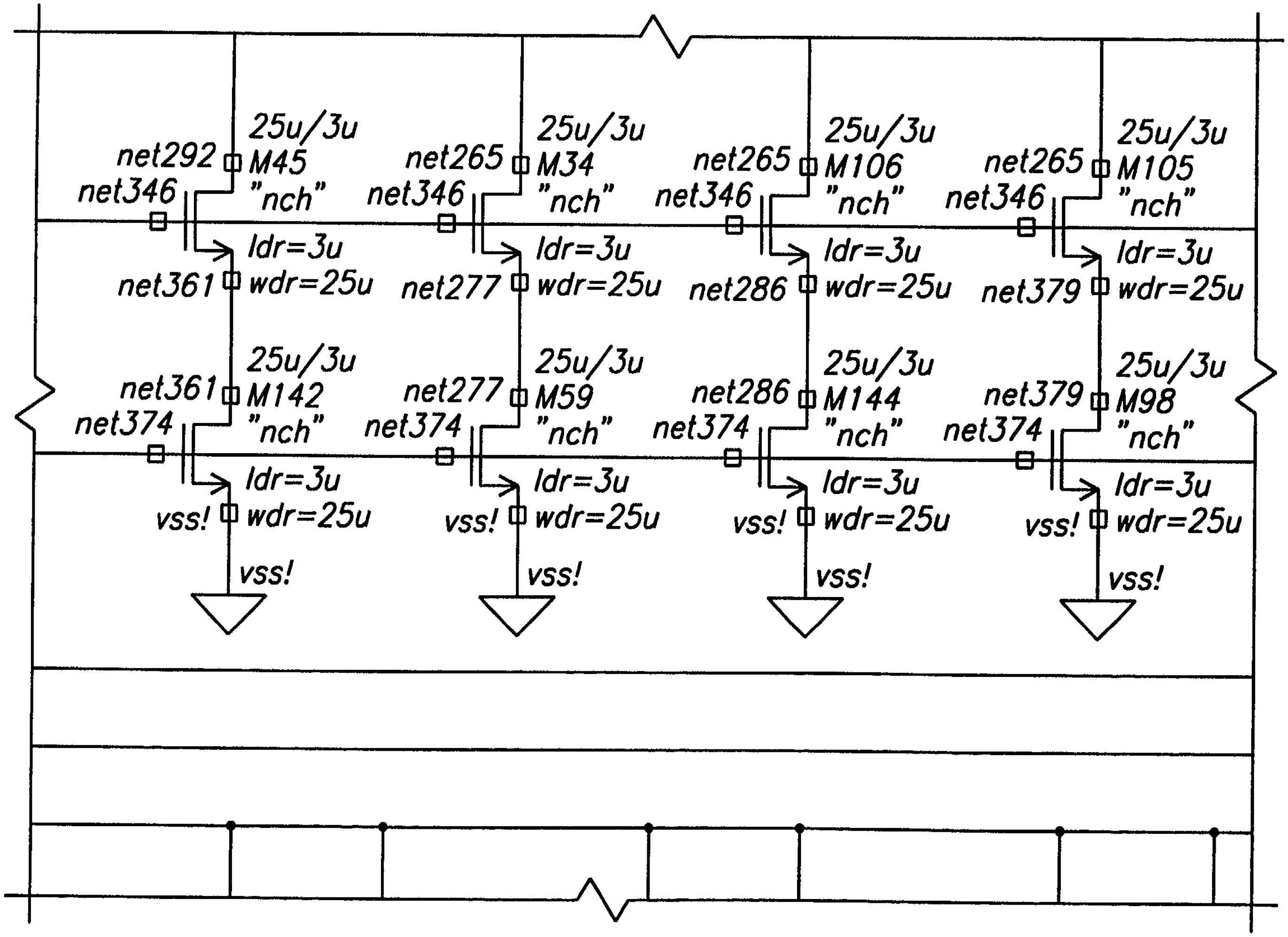

net292
net346
25u/3u
M45
"nch"
ldr=3u
net361
wdr=25u
net265
net346
25u/3u
M34
"nch"
ldr=3u
net277
wdr=25u
net265
net346
25u/3u
M106
"nch"
ldr=3u
net286
wdr=25u
net265
net346
25u/3u
M105
"nch"
ldr=3u
net379
wdr=25u
net361
net374
25u/3u
M142
"nch"
ldr=3u
vss!
wdr=25u
vss!
net277
net374
25u/3u
M59
"nch"
ldr=3u
vss!
wdr=25u
vss!
net286
net374
25u/3u
M144
"nch"
ldr=3u
vss!
wdr=25u
vss!
net379
net374
25u/3u
M98
"nch"
ldr=3u
vss!
wdr=25u
vss!

Fig 9.07BD

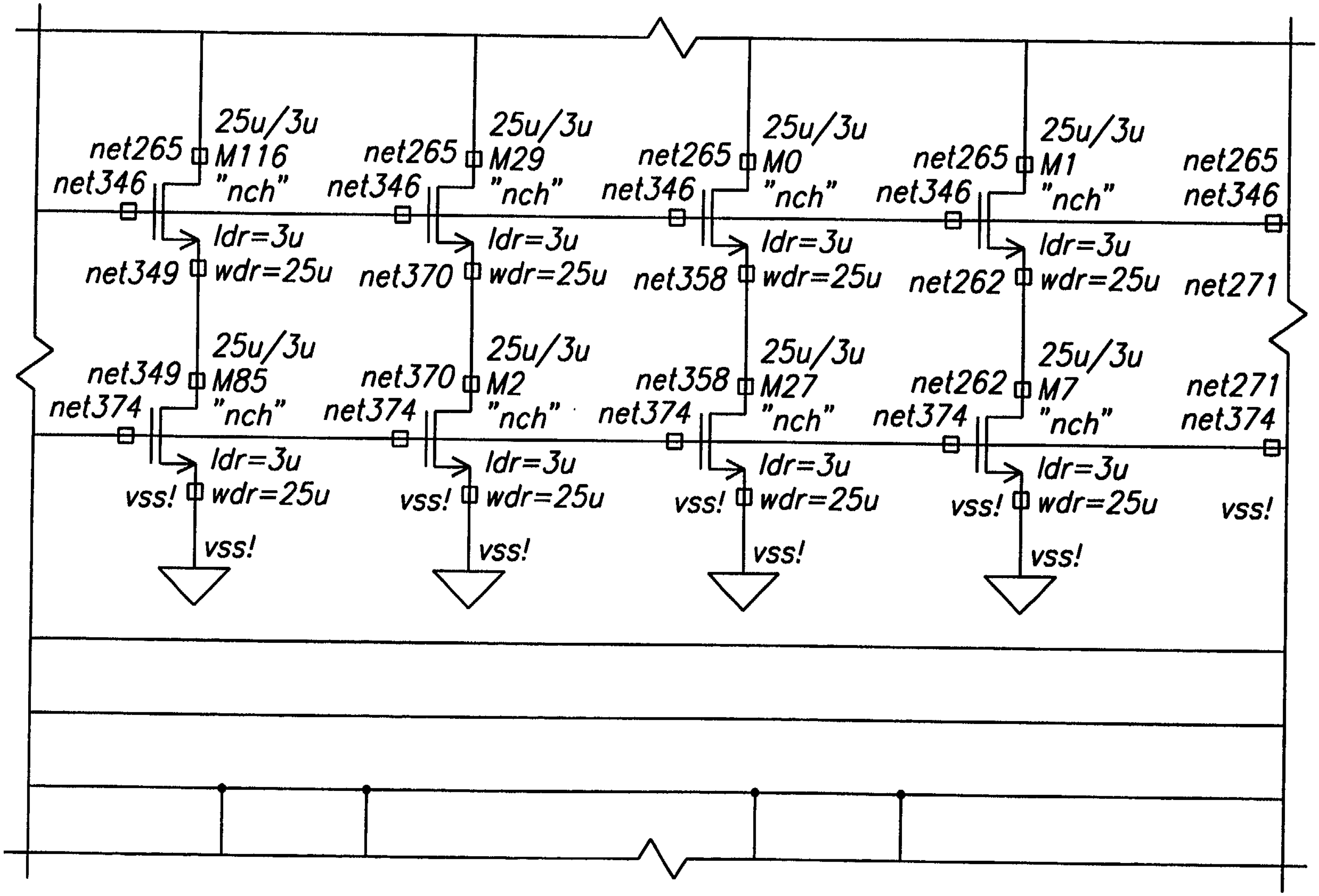

25u/3u
M116
"nch"
net265
net346
ldr=3u
wdr=25u
net349
25u/3u
M85
"nch"
net349
net374
ldr=3u
wdr=25u
vss!
vss!
25u/3u
M29
"nch"
net265
net346
ldr=3u
wdr=25u
net370
25u/3u
M2
"nch"
net370
net374
ldr=3u
wdr=25u
vss!
vss!
25u/3u
M0
"nch"
net265
net346
ldr=3u
wdr=25u
net358
25u/3u
M27
"nch"
net358
net374
ldr=3u
wdr=25u
vss!
vss!
25u/3u
M1
"nch"
net265
net346
ldr=3u
wdr=25u
net262
25u/3u
M7
"nch"
net262
net374
ldr=3u
wdr=25u
vss!
vss!
net265
net346
net271
net271
net374
vss!

FIG. 9.07BE

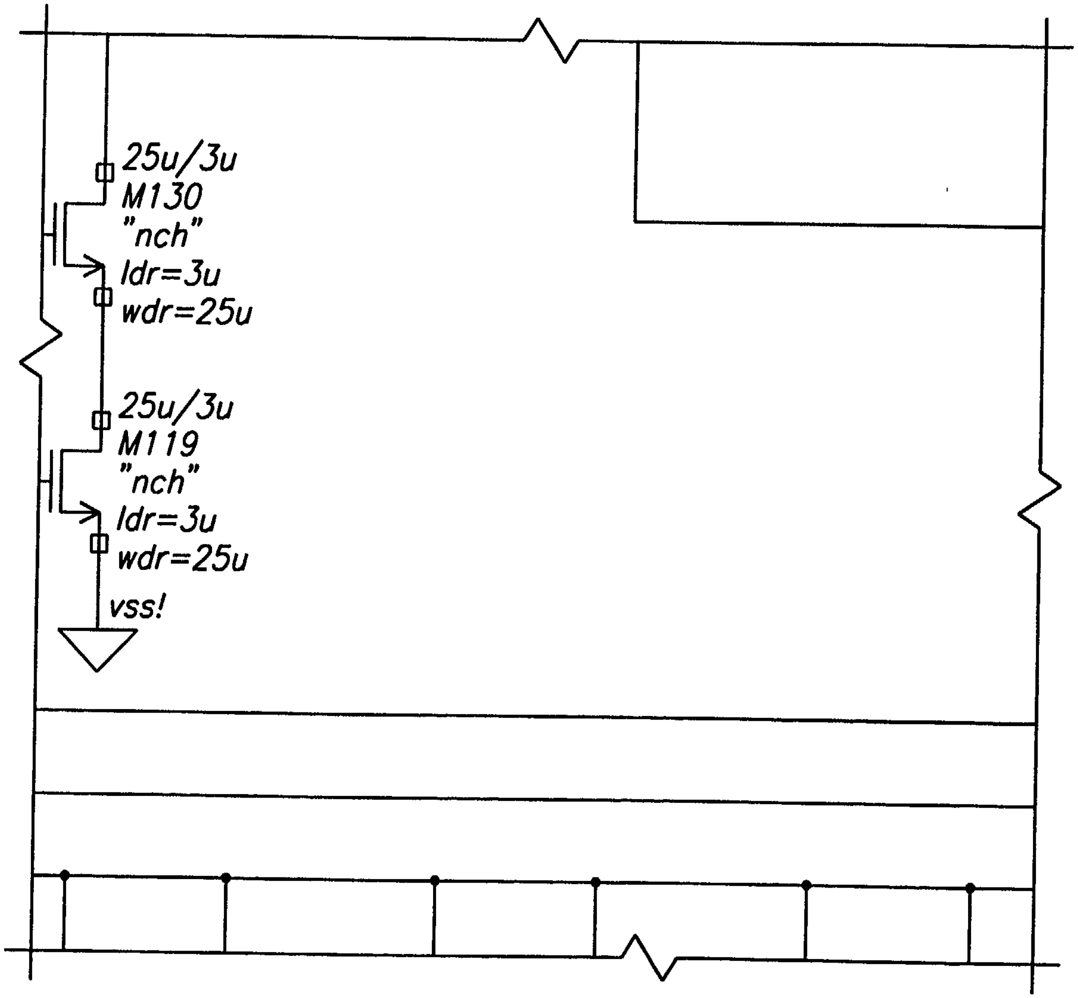


Fig 9.07BF

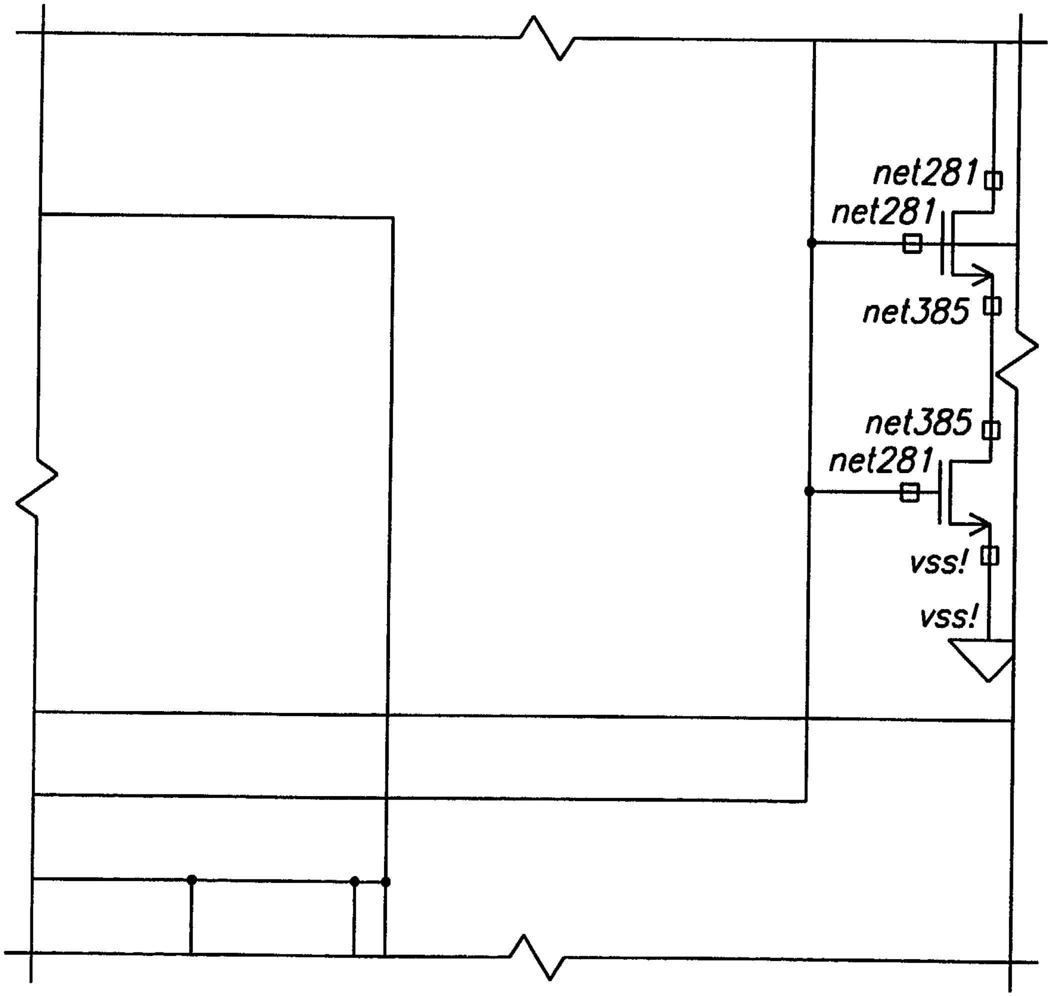


FIG 9.07BG

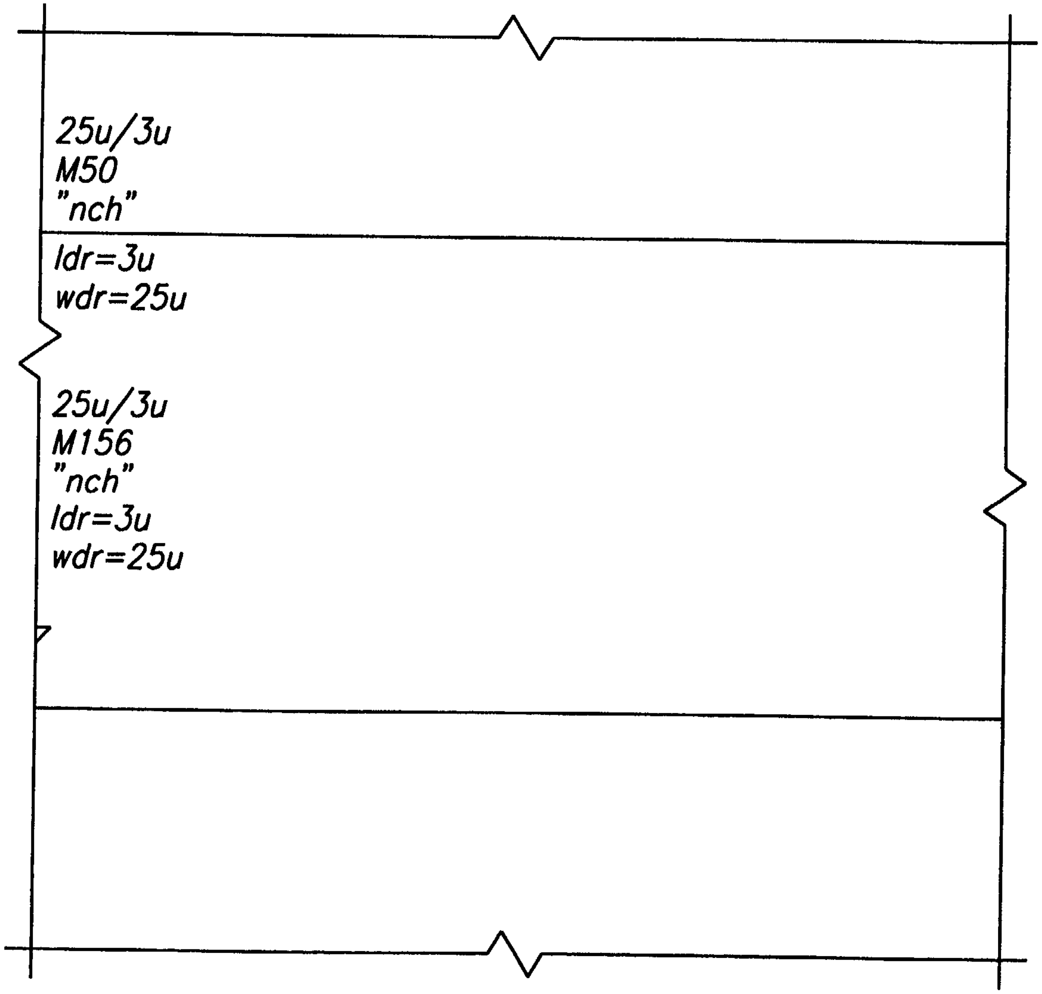


Fig 9.07BH

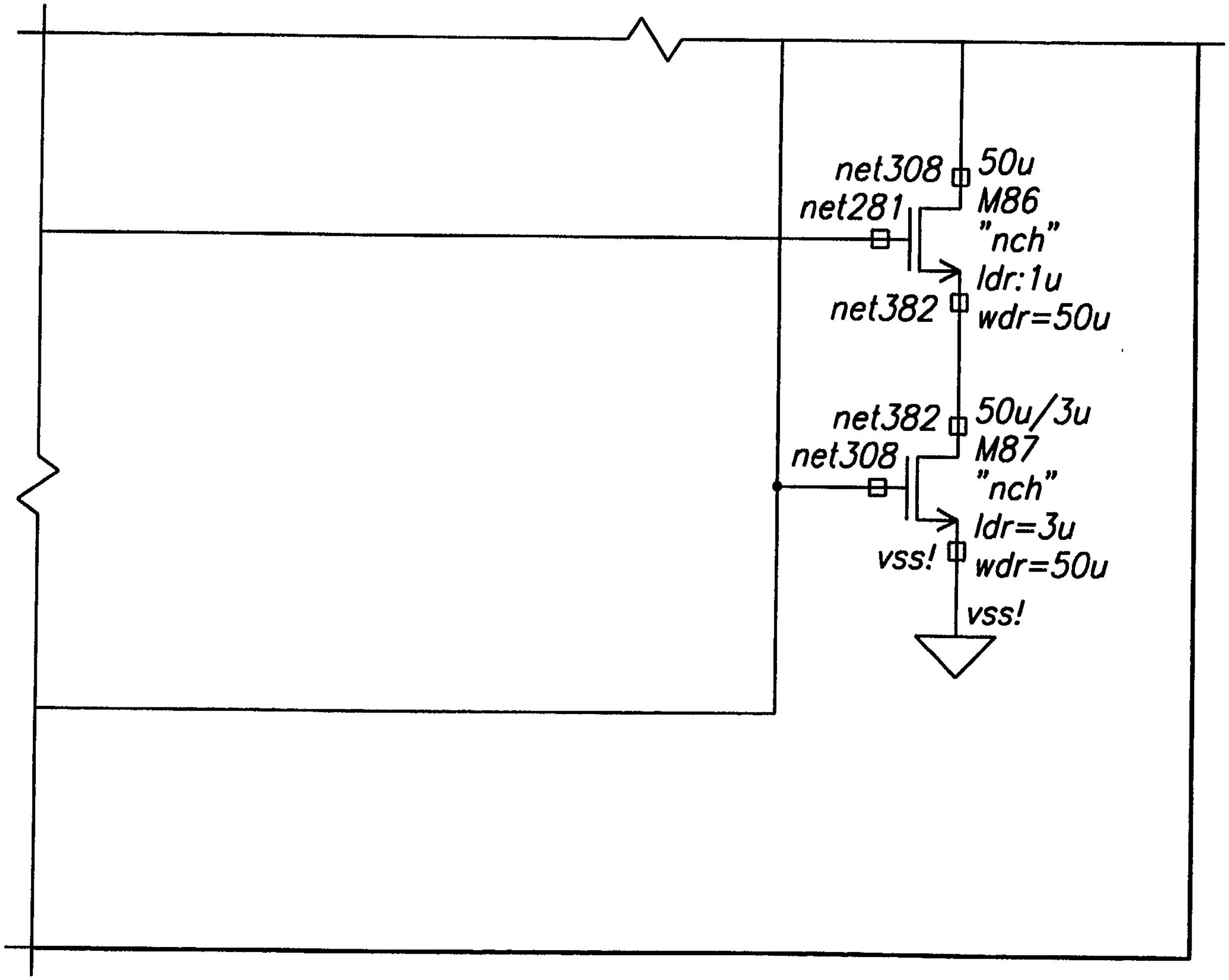

net308
50u
M86
"nch"
net281
ldr:1u
net382
wdr=50u
net382
50u/3u
M87
"nch"
net308
ldr=3u
vss!
wdr=50u
vss!

Fig 9.07B1

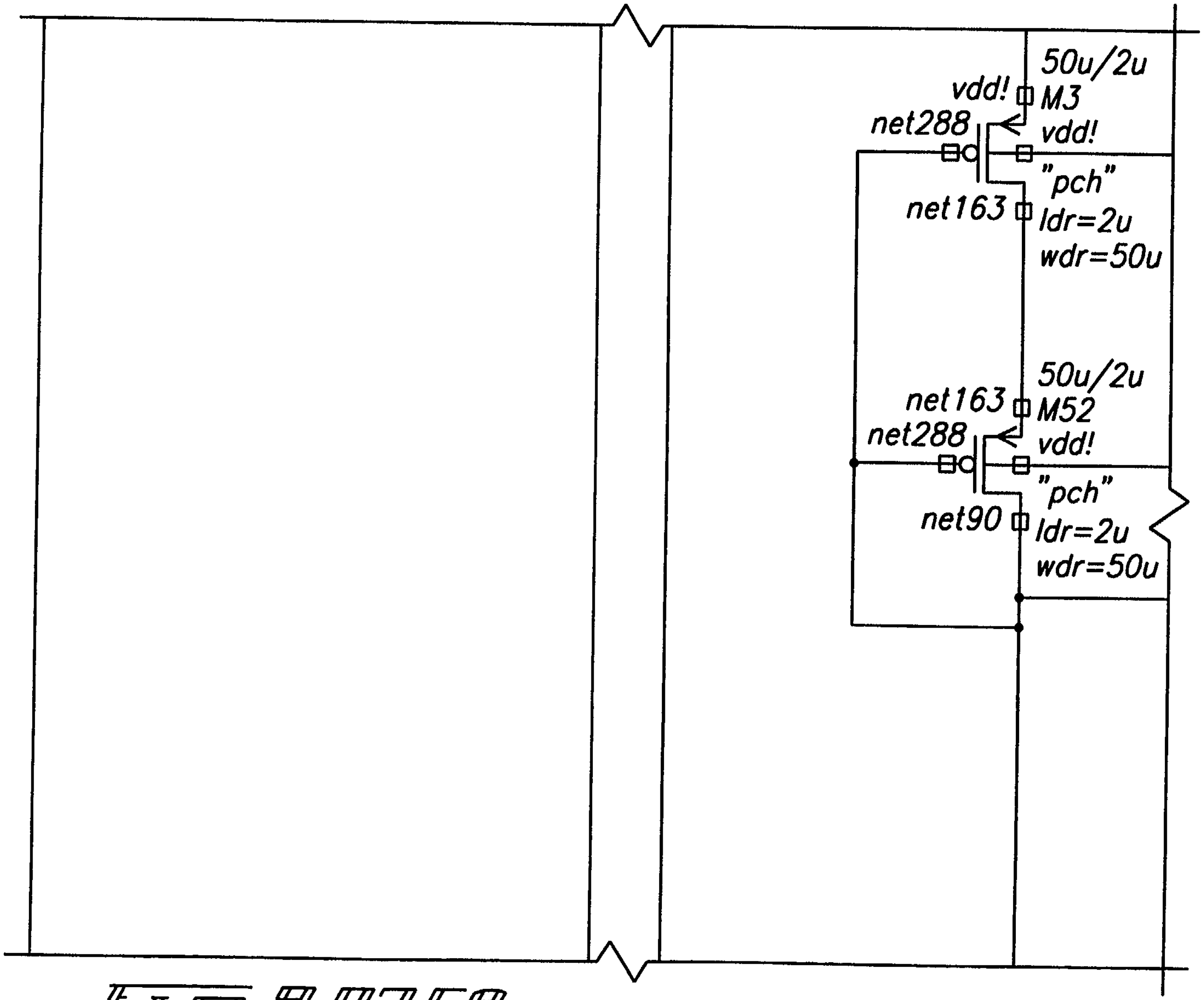

50u/2u
vdd!
M3
net288
vdd!
"pch"
net163
ldr=2u
wdr=50u
50u/2u
net163
M52
net288
vdd!
"pch"
net90
ldr=2u
wdr=50u

Fig 9.07CA

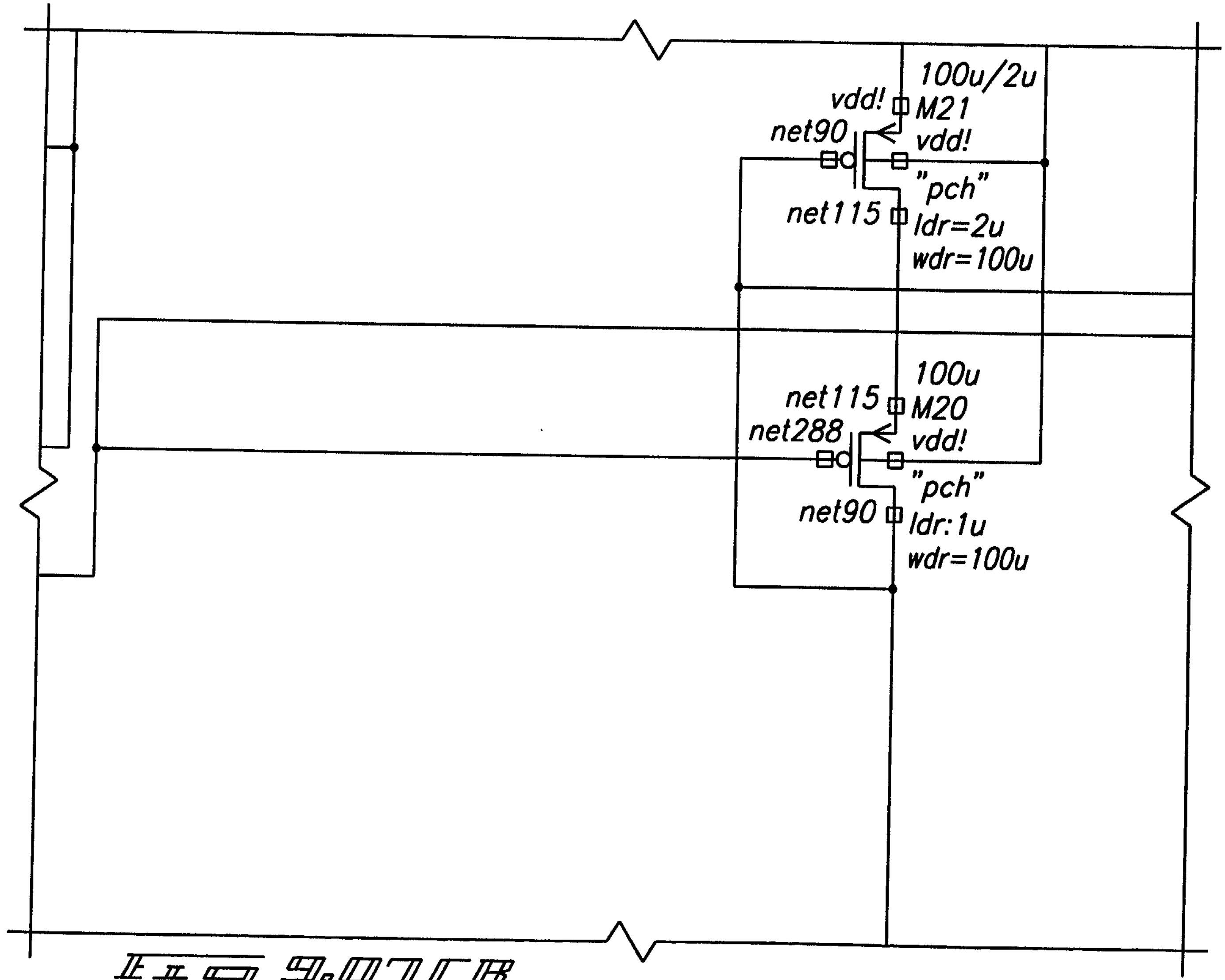

100u/2u
vdd!
M21
net90
vdd!
"pch"
net115
ldr=2u
wdr=100u
100u
net115
M20
net288
vdd!
"pch"
net90
ldr:1u
wdr=100u

FIG 9.07CB

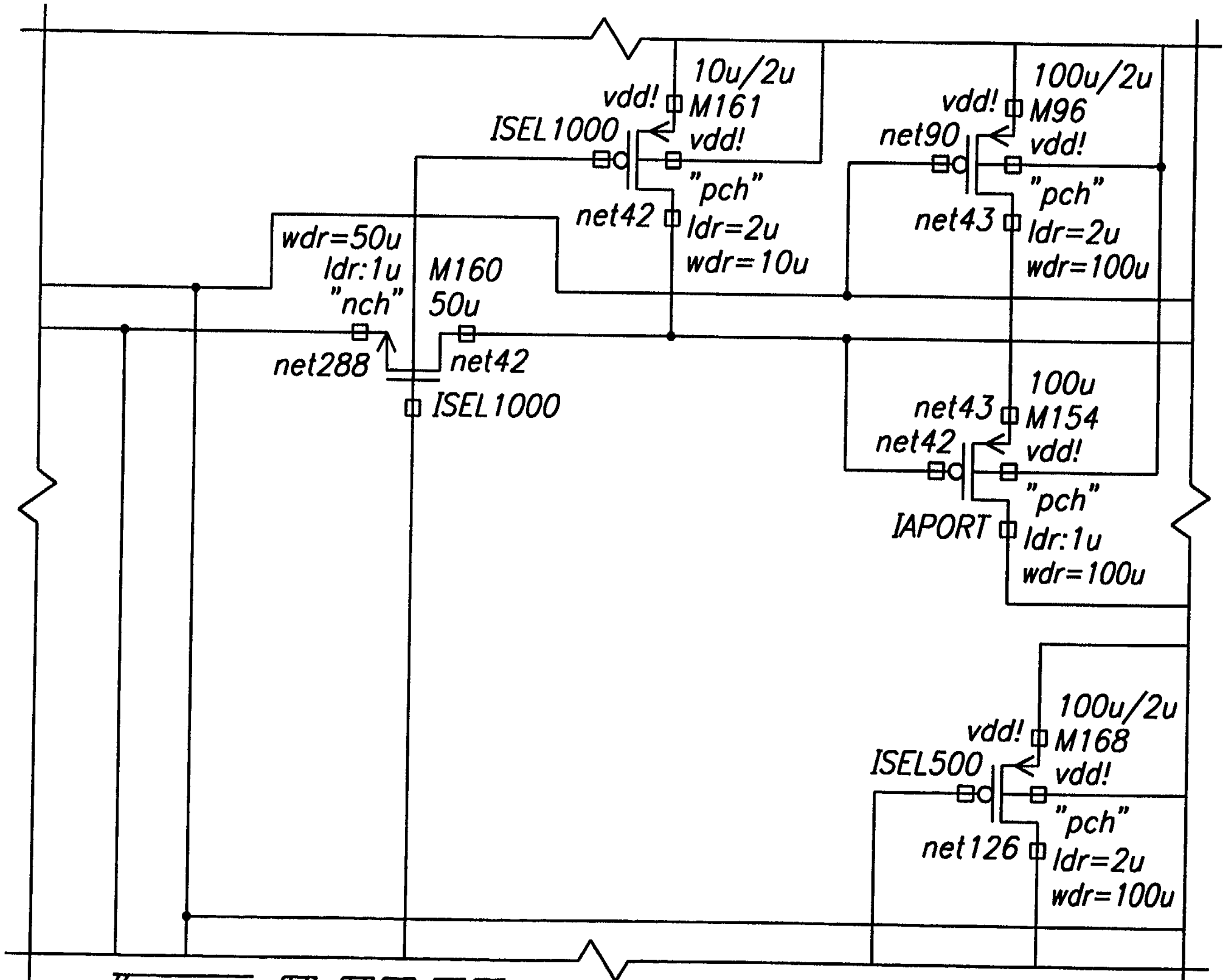

10u/2u
vdd!
M161
ISEL1000
vdd!
"pch"
net42
ldr=2u
wdr=10u
100u/2u
vdd!
M96
net90
vdd!
"pch"
net43
ldr=2u
wdr=100u
wdr=50u
ldr:1u
"nch"
M160
50u
net288
net42
ISEL1000
100u
net43
M154
net42
vdd!
"pch"
IAPORT
ldr:1u
wdr=100u
100u/2u
vdd!
M168
ISEL500
vdd!
"pch"
net126
ldr=2u
wdr=100u

Fig 9.07CC

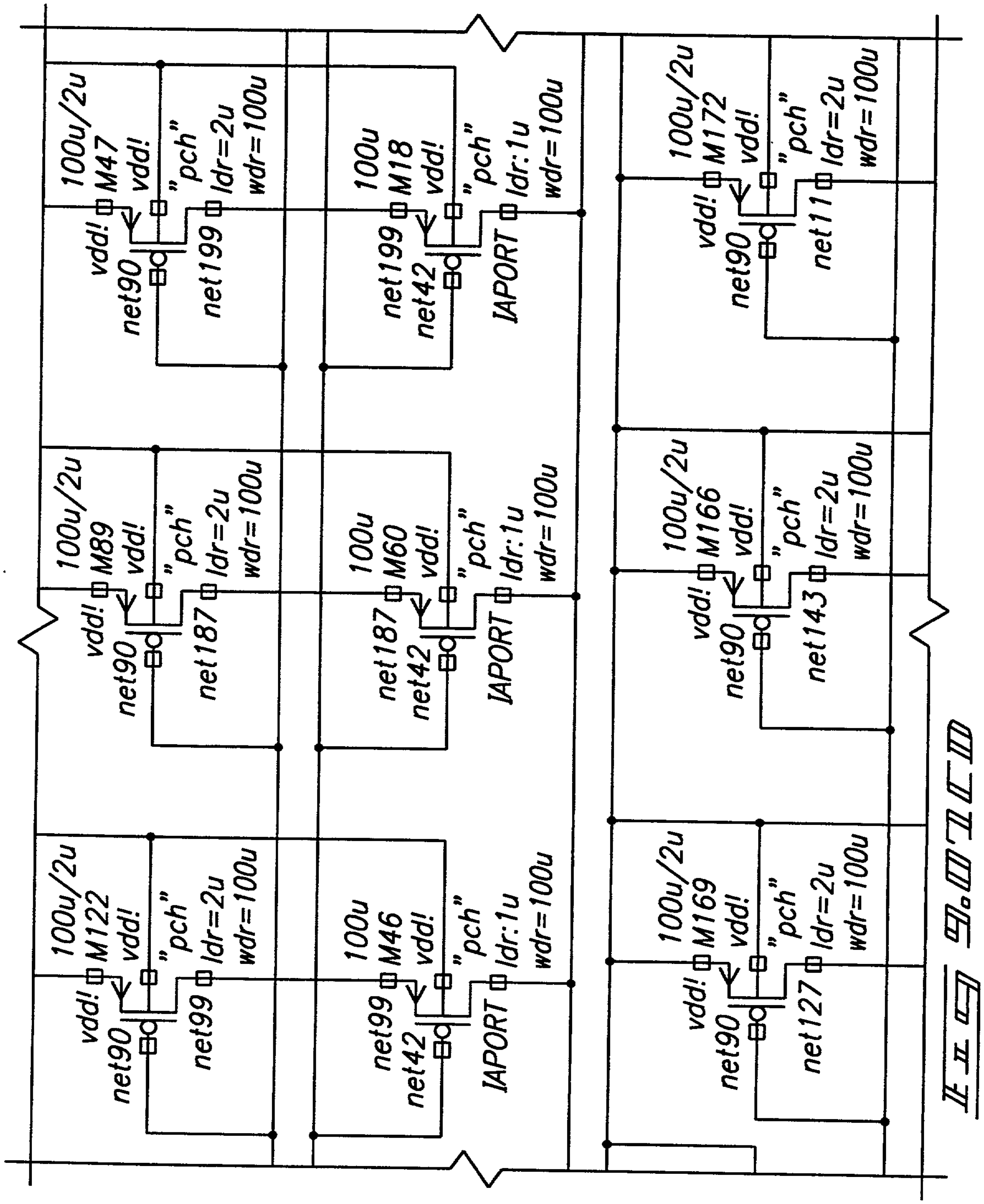

100u/2u
M47
vdd!
vdd!
"pch"
ldr=2u
wdr=100u
net90
net199
100u
M18
vdd!
"pch"
ldr:1u
wdr=100u
net199
net42
IAPORT
100u/2u
M172
vdd!
vdd!
"pch"
ldr=2u
wdr=100u
net90
net11
100u/2u
M89
vdd!
vdd!
"pch"
ldr=2u
wdr=100u
net90
net187
100u
M60
vdd!
"pch"
ldr:1u
wdr=100u
net187
net42
IAPORT
100u/2u
M166
vdd!
vdd!
"pch"
ldr=2u
wdr=100u
net90
net143
100u/2u
M122
vdd!
vdd!
"pch"
ldr=2u
wdr=100u
net90
net99
100u
M46
vdd!
"pch"
ldr:1u
wdr=100u
net99
net42
IAPORT
100u/2u
M169
vdd!
vdd!
"pch"
ldr=2u
wdr=100u
net90
net127

Fig 9.07CD

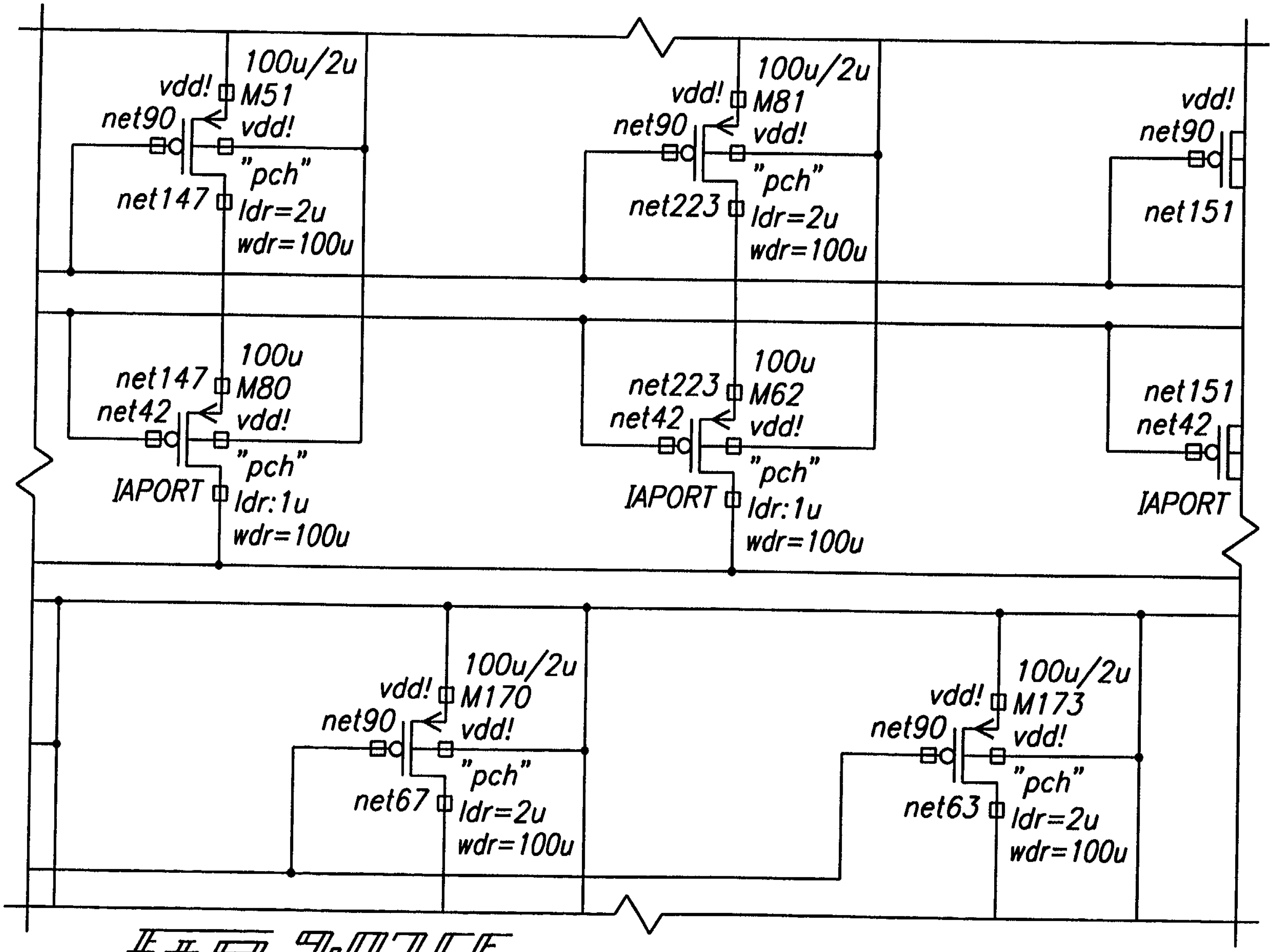

100u/2u
vdd!
M51
net90
vdd!
"pch"
net147
ldr=2u
wdr=100u
100u/2u
vdd!
M81
net90
vdd!
"pch"
net223
ldr=2u
wdr=100u
vdd!
net90
net151
100u
net147
M80
net42
vdd!
"pch"
IAPORT
ldr:1u
wdr=100u
100u
net223
M62
net42
vdd!
"pch"
IAPORT
ldr:1u
wdr=100u
net151
net42
IAPORT
100u/2u
vdd!
M170
net90
vdd!
"pch"
net67
ldr=2u
wdr=100u
100u/2u
vdd!
M173
net90
vdd!
"pch"
net63
ldr=2u
wdr=100u

FIG 9.07CE

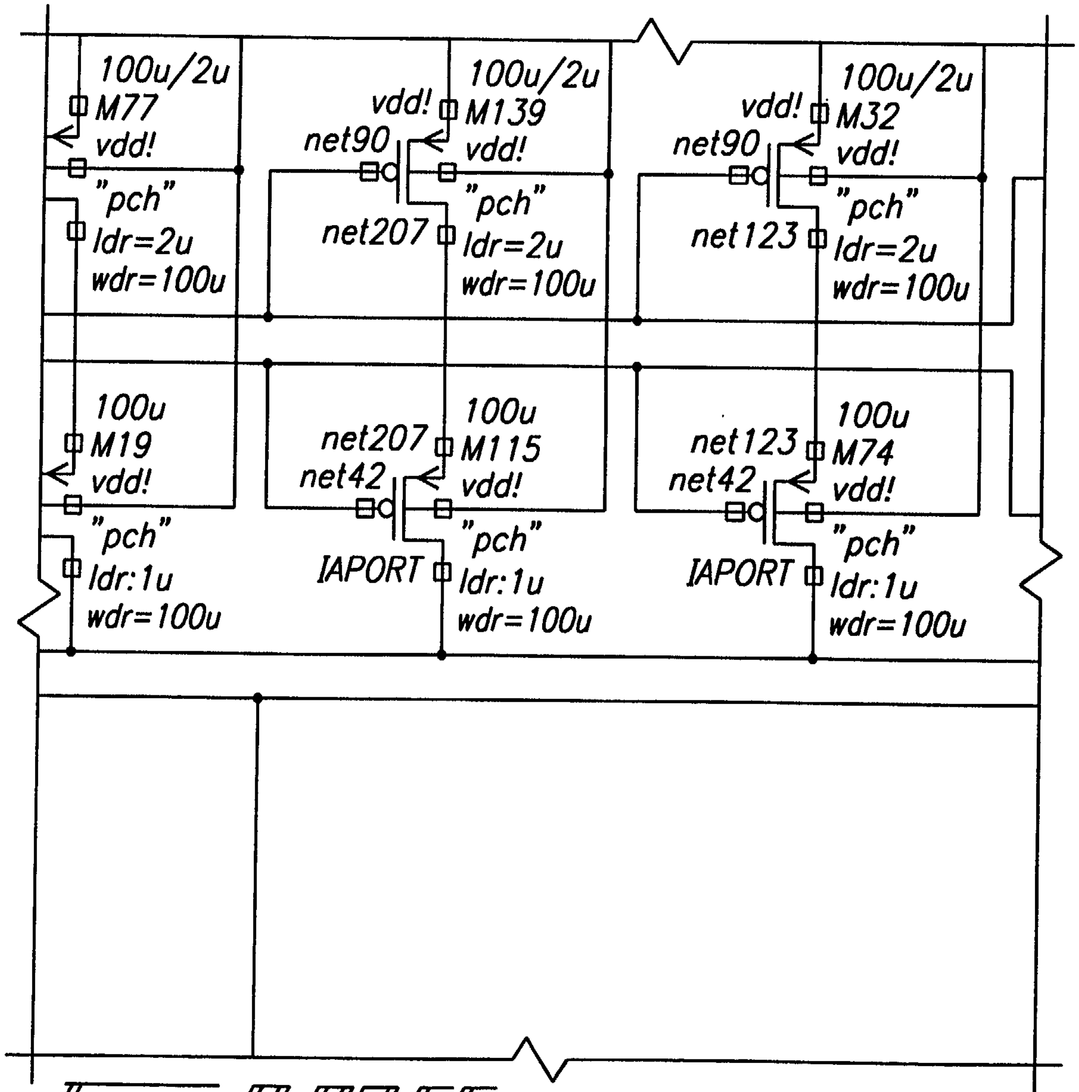

100u/2u
M77
vdd!
"pch"
ldr=2u
wdr=100u
vdd!
net90
100u/2u
M139
vdd!
net207
"pch"
ldr=2u
wdr=100u
vdd!
net90
100u/2u
M32
vdd!
net123
"pch"
ldr=2u
wdr=100u
100u
M19
vdd!
"pch"
ldr:1u
wdr=100u
net207
net42
100u
M115
vdd!
IAPORT
"pch"
ldr:1u
wdr=100u
net123
net42
100u
M74
vdd!
IAPORT
"pch"
ldr:1u
wdr=100u

FIG 9.07CF

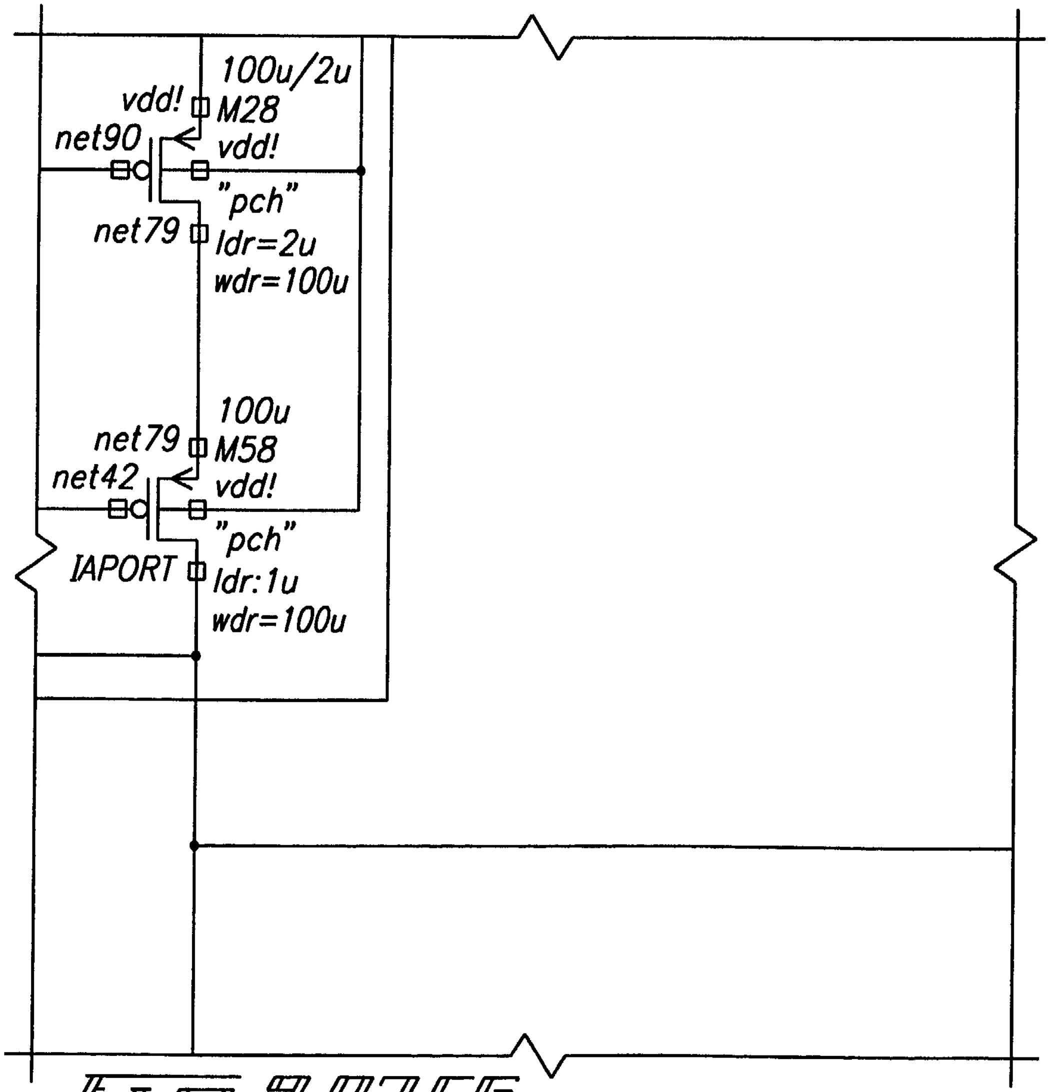

100u/2u
vdd!
M28
net90
vdd!
"pch"
net79
ldr=2u
wdr=100u
100u
net79
M58
net42
vdd!
"pch"
IAPORT
ldr:1u
wdr=100u

Fig 9.01CG

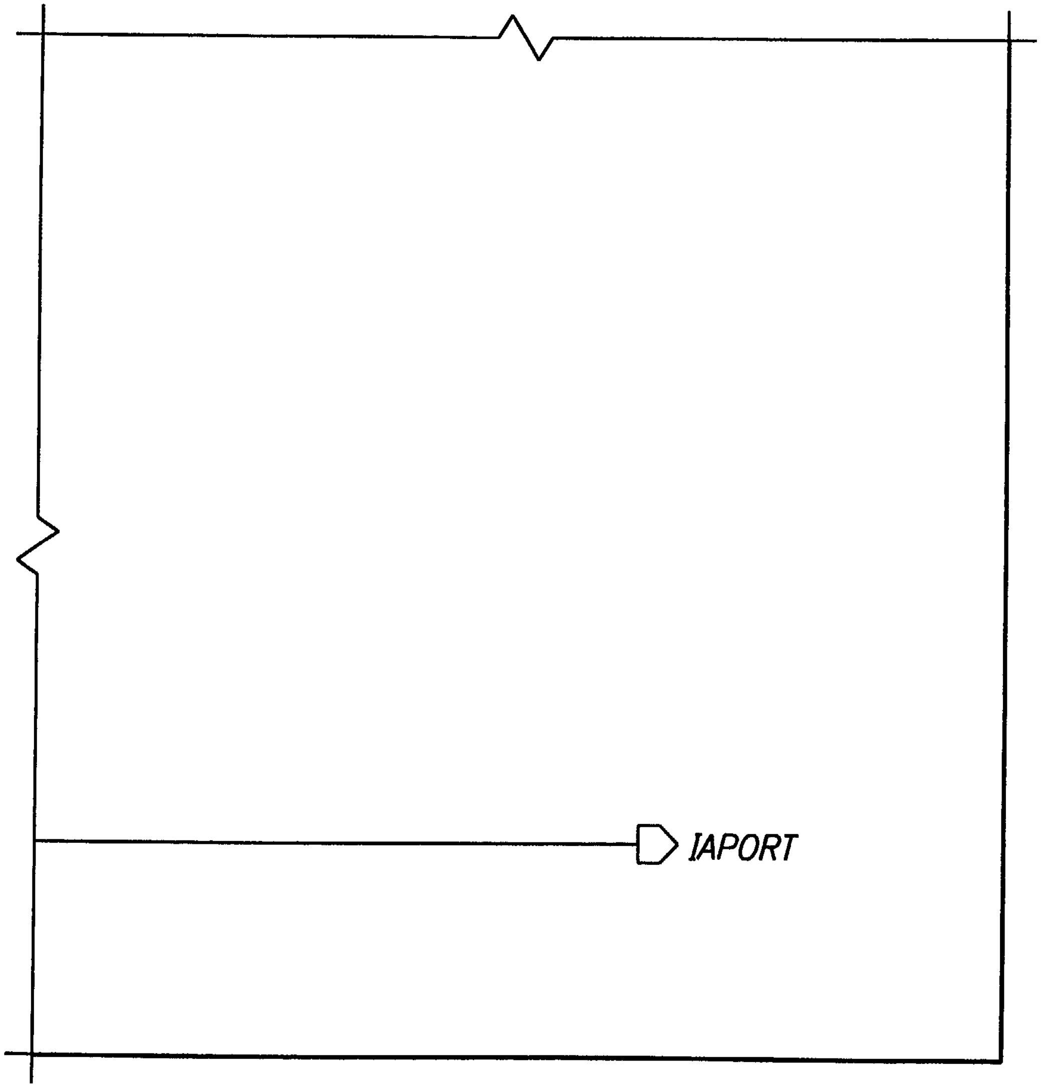


Fig 9.01CH

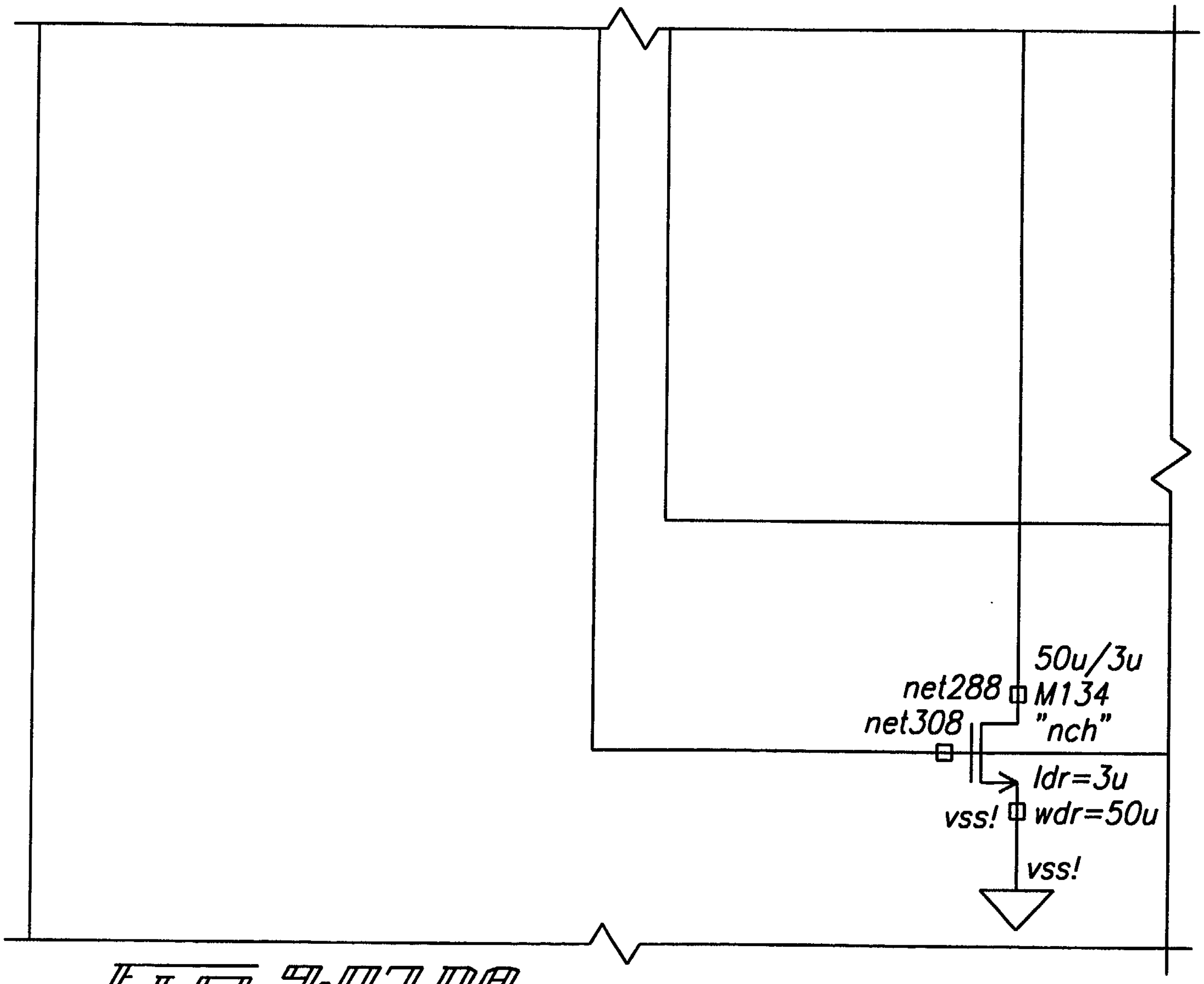


FIG 9.07DA

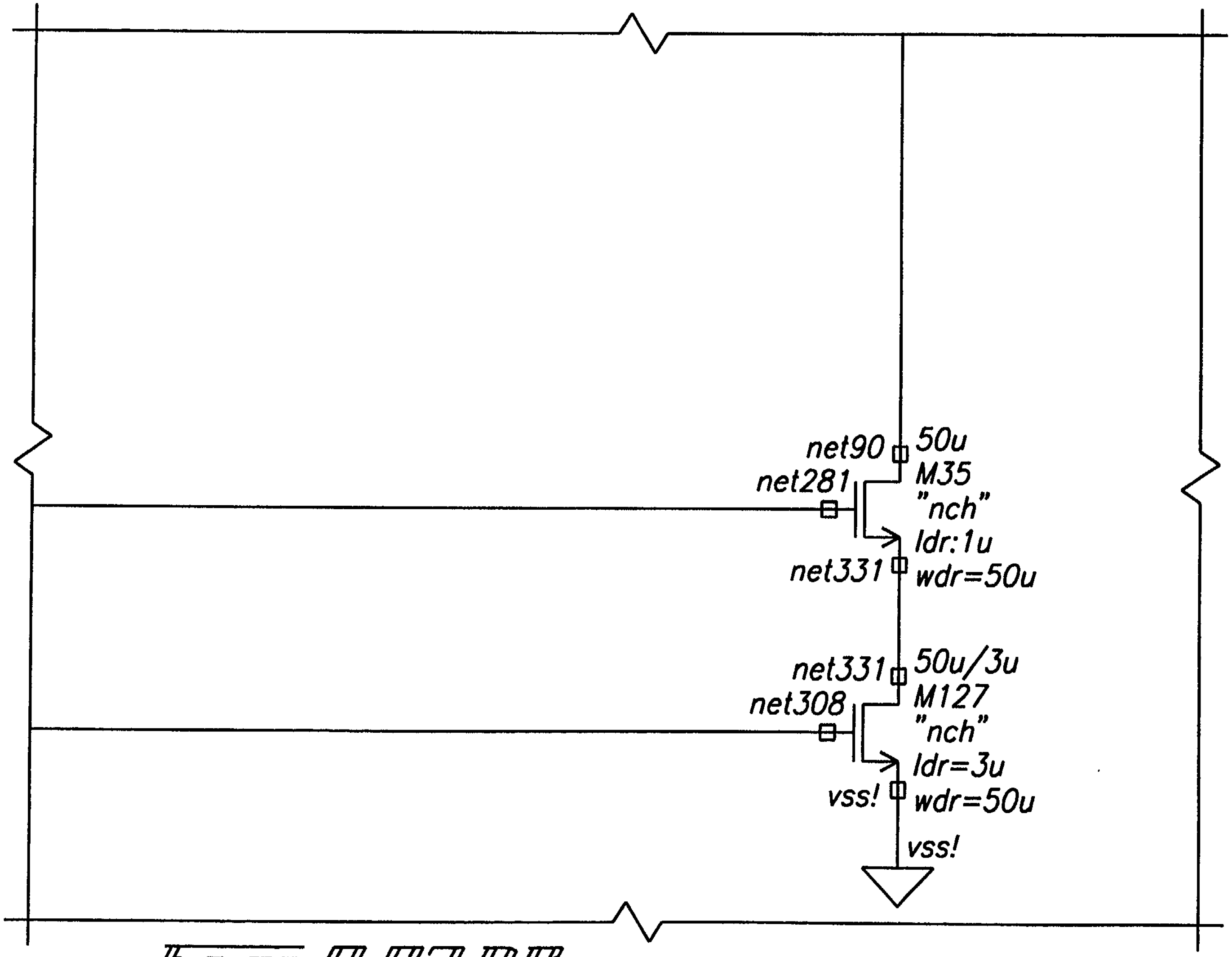

net90
50u
M35
"nch"
net281
ldr:1u
net331
wdr=50u
net331
50u/3u
M127
"nch"
net308
ldr=3u
vss!
wdr=50u
vss!

Fig 9.010B

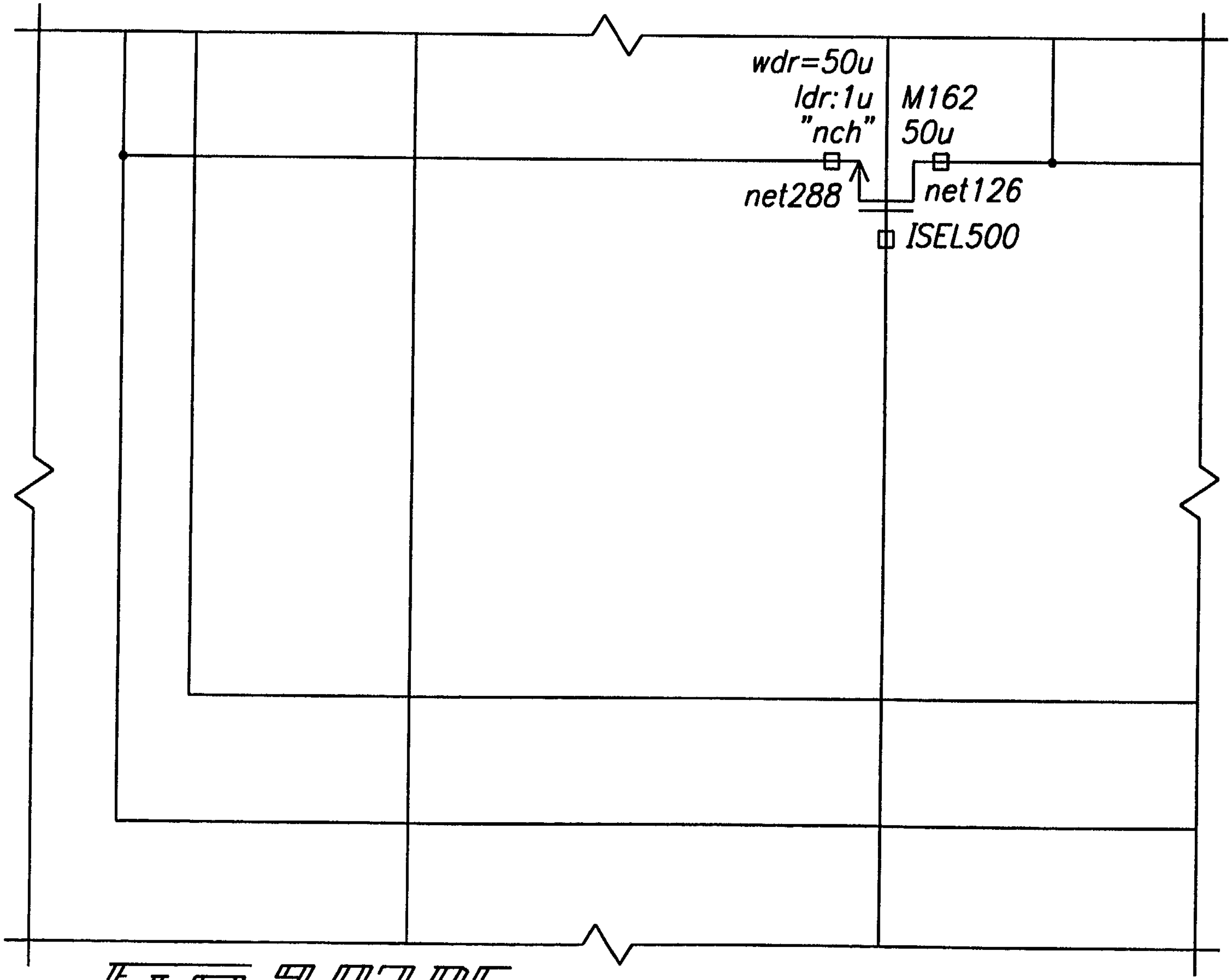


Fig 9.07DC

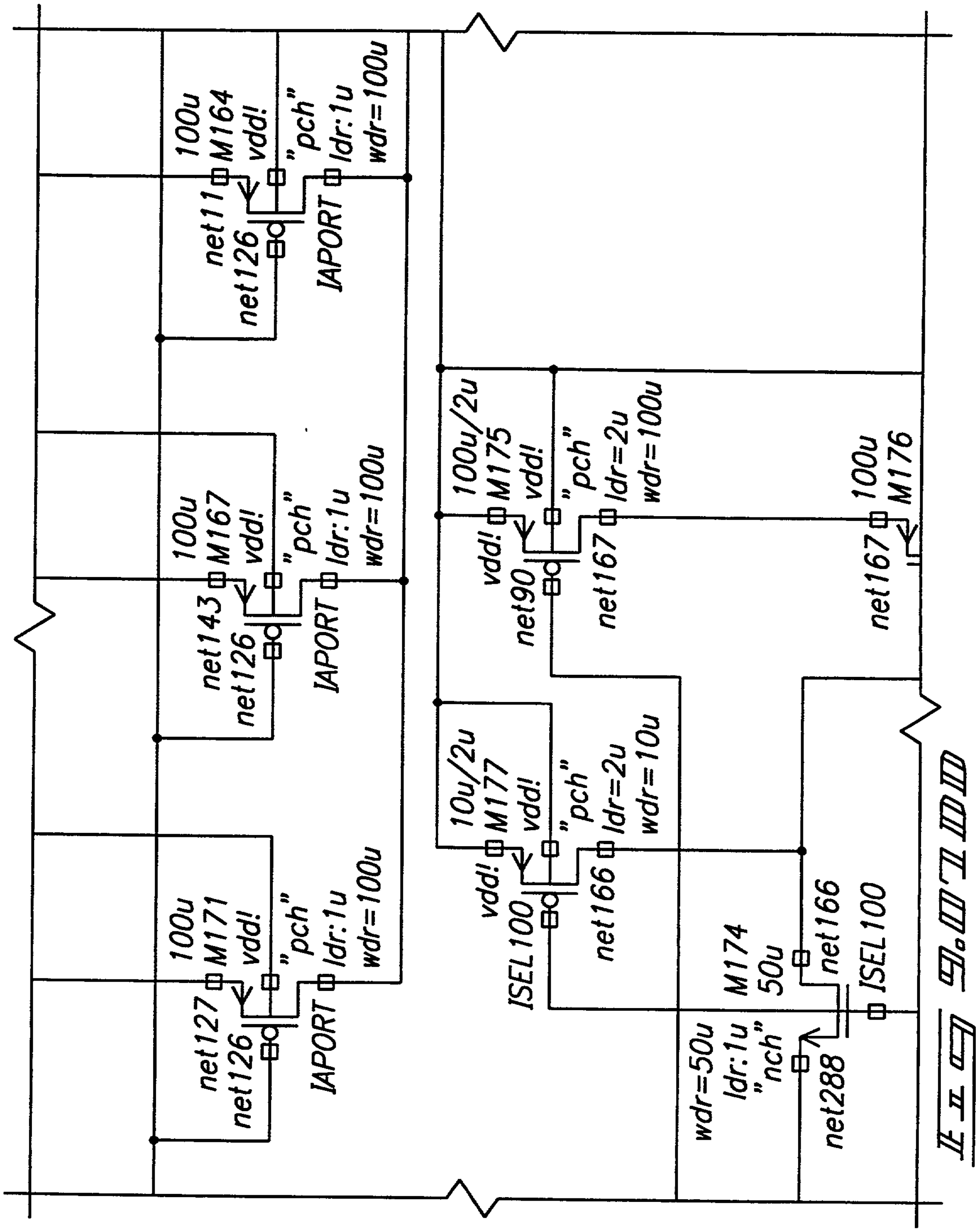

100u
M164
vdd!
"pch"
ldr:1u
wdr=100u
net11
net126
IAPORT
100u
M167
vdd!
"pch"
ldr:1u
wdr=100u
net143
net126
IAPORT
100u
M171
vdd!
"pch"
ldr:1u
wdr=100u
net127
net126
IAPORT
100u/2u
M175
vdd!
"pch"
ldr=2u
wdr=100u
vdd!
net90
net167
100u
M176
net167
10u/2u
M177
vdd!
"pch"
ldr=2u
wdr=10u
vdd!
ISEL100
net166
M174
50u
net166
ISEL100
wdr=50u
ldr:1u
"nch"
net288

Fig 9.DIDD

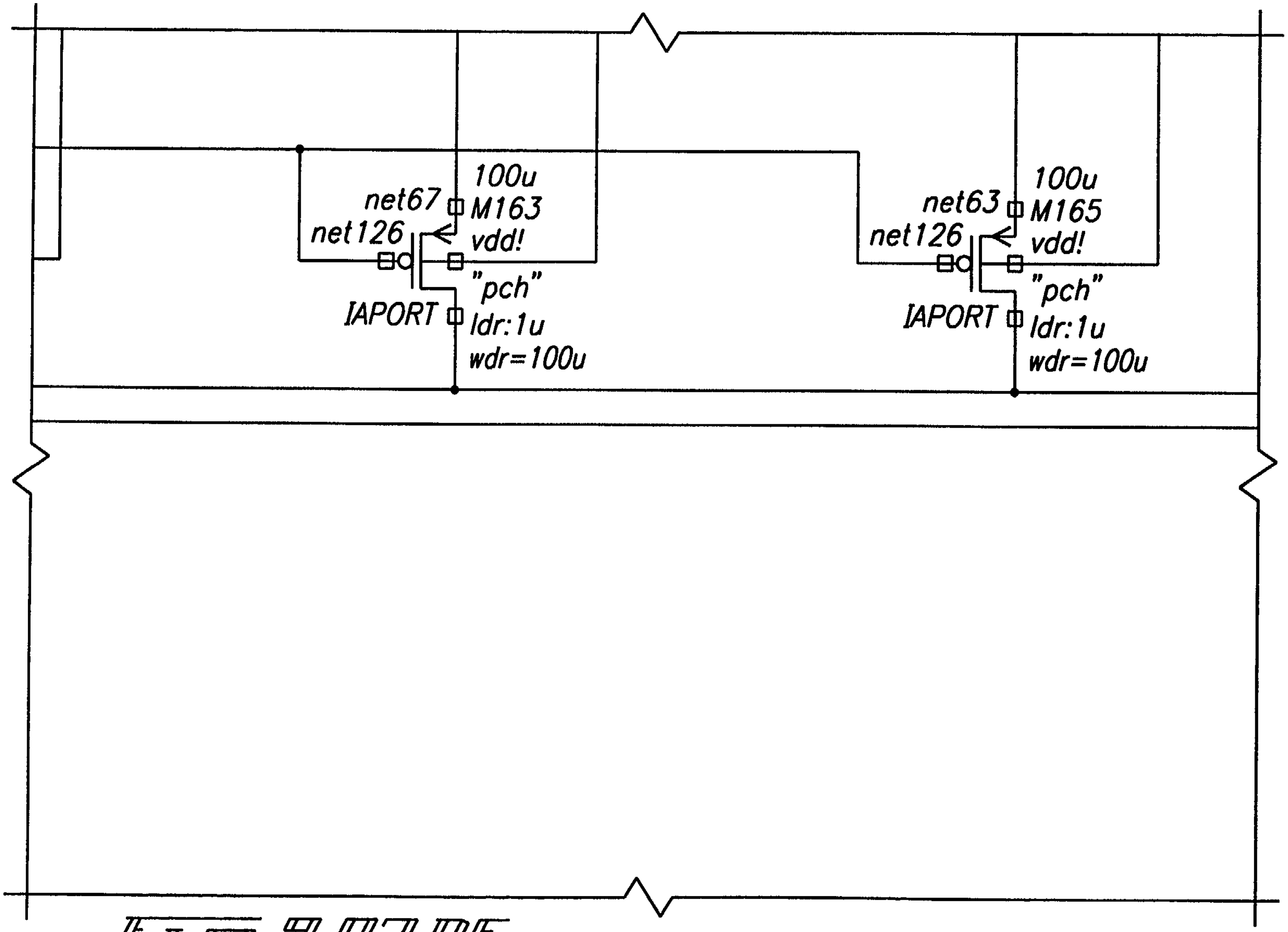
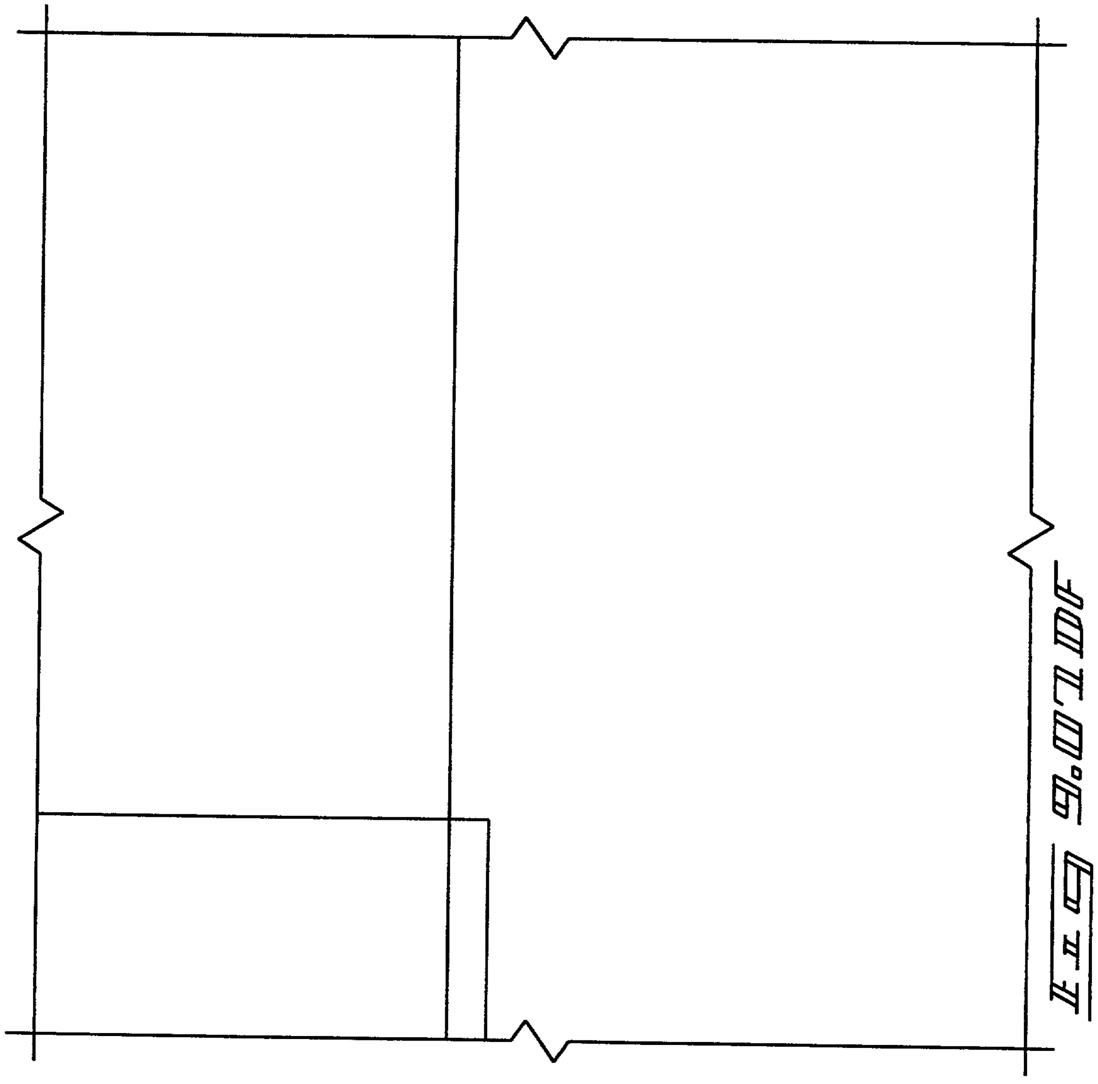

net67
net126
100u
M163
vdd!
"pch"
IAPORT
ldr:1u
wdr=100u
net63
net126
100u
M165
vdd!
"pch"
IAPORT
ldr:1u
wdr=100u

Fig 9.01DE



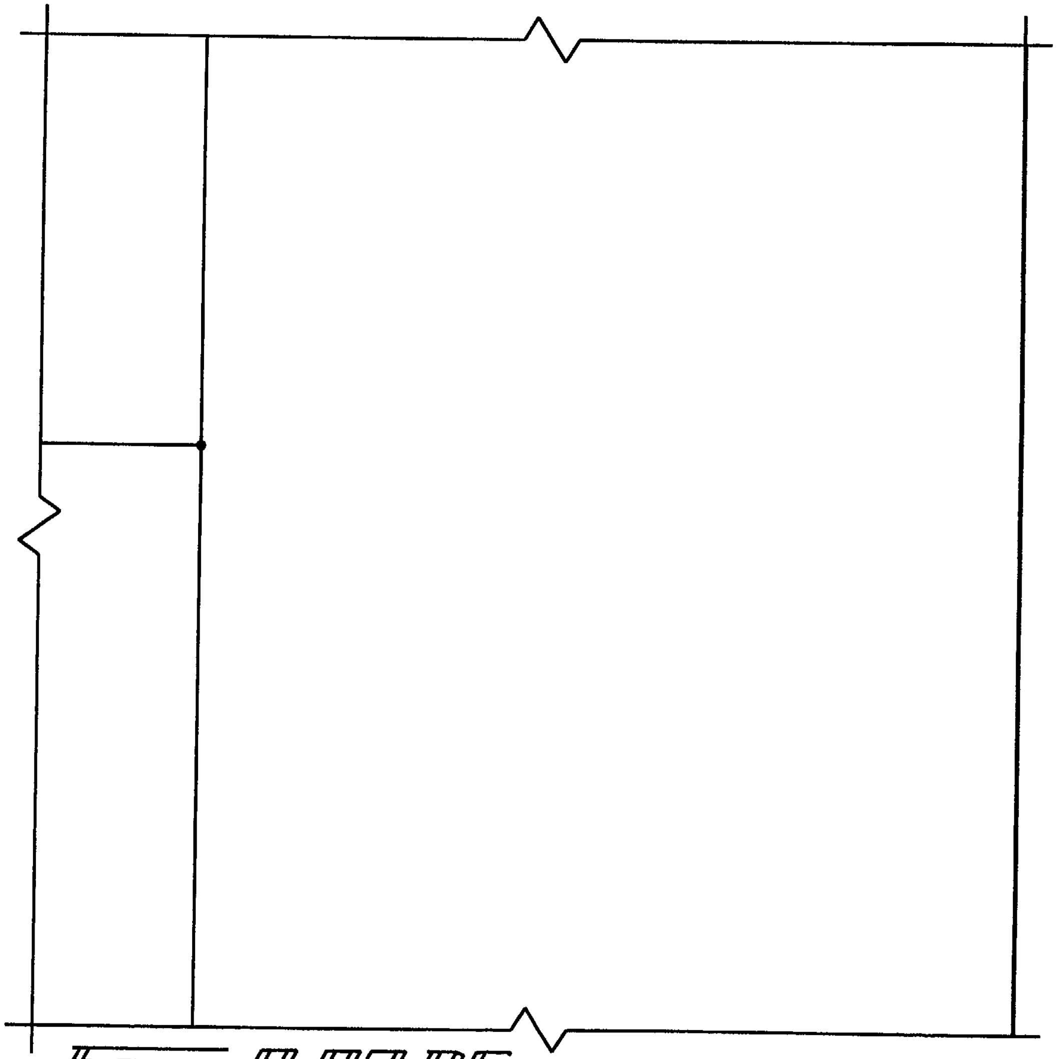


FIG 9.01D6

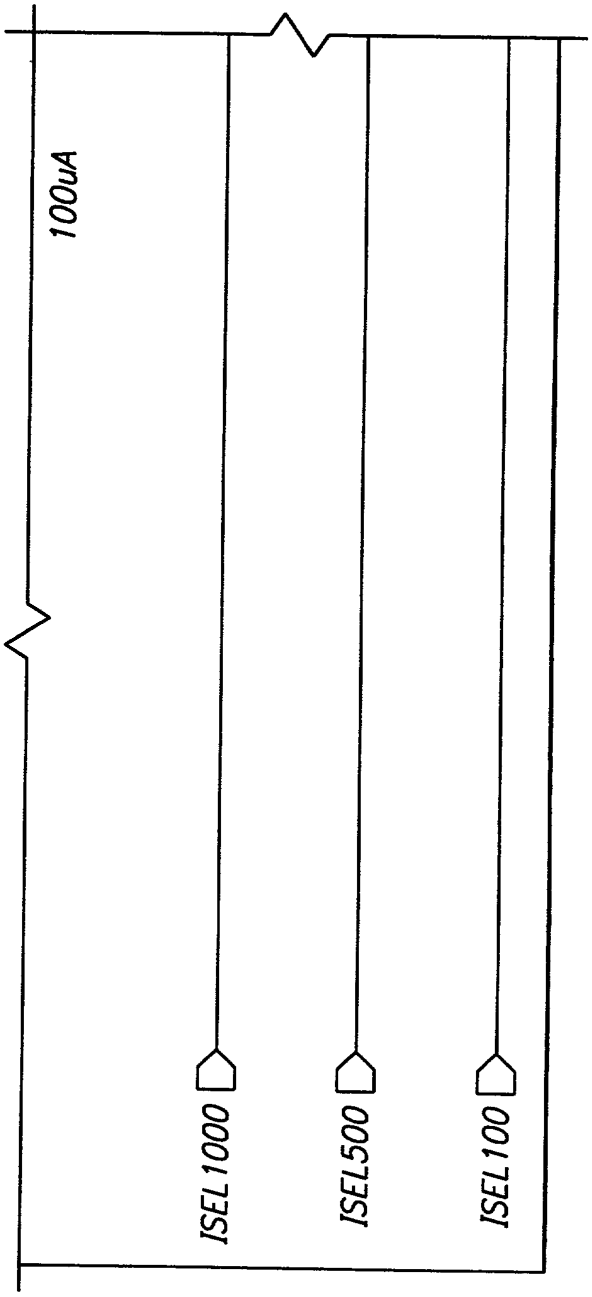


Fig 9.07EA

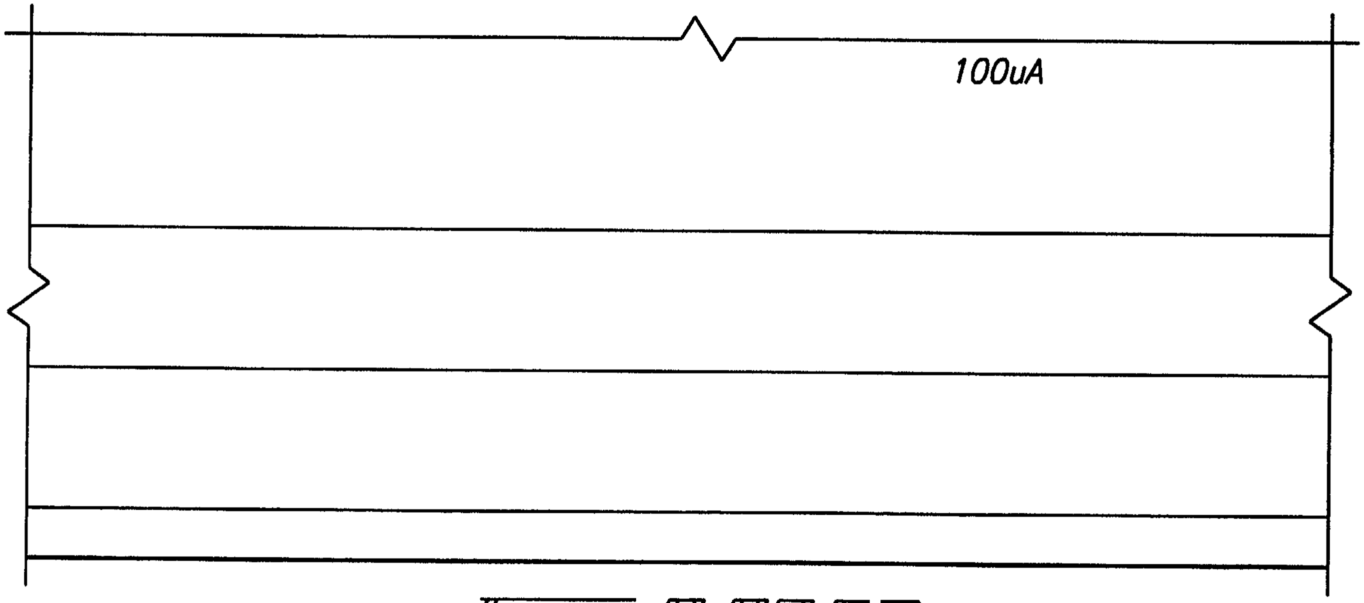


Fig 9.07EB

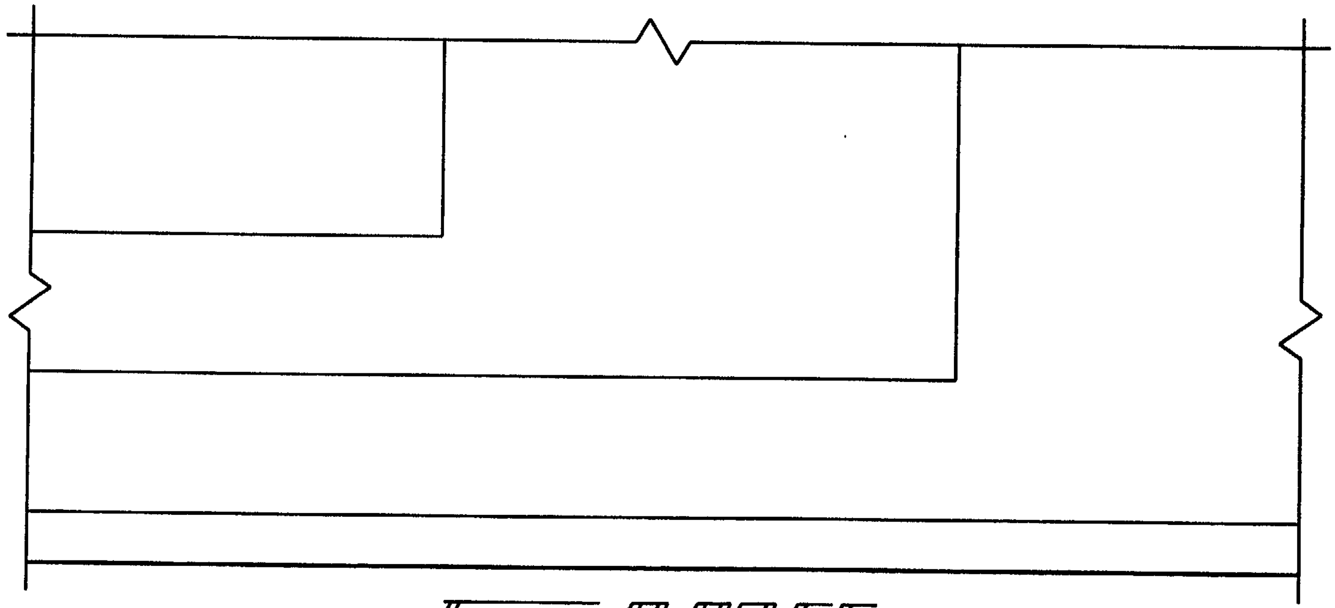


Fig 9.01EC

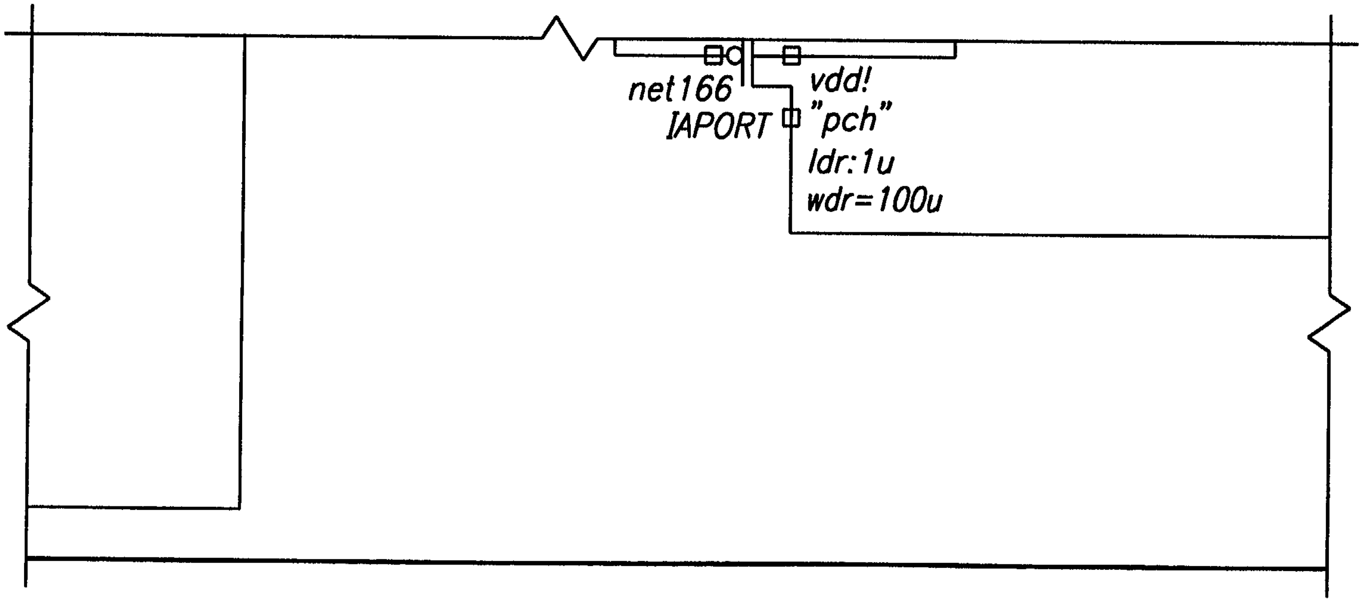


FIG 9.07ED

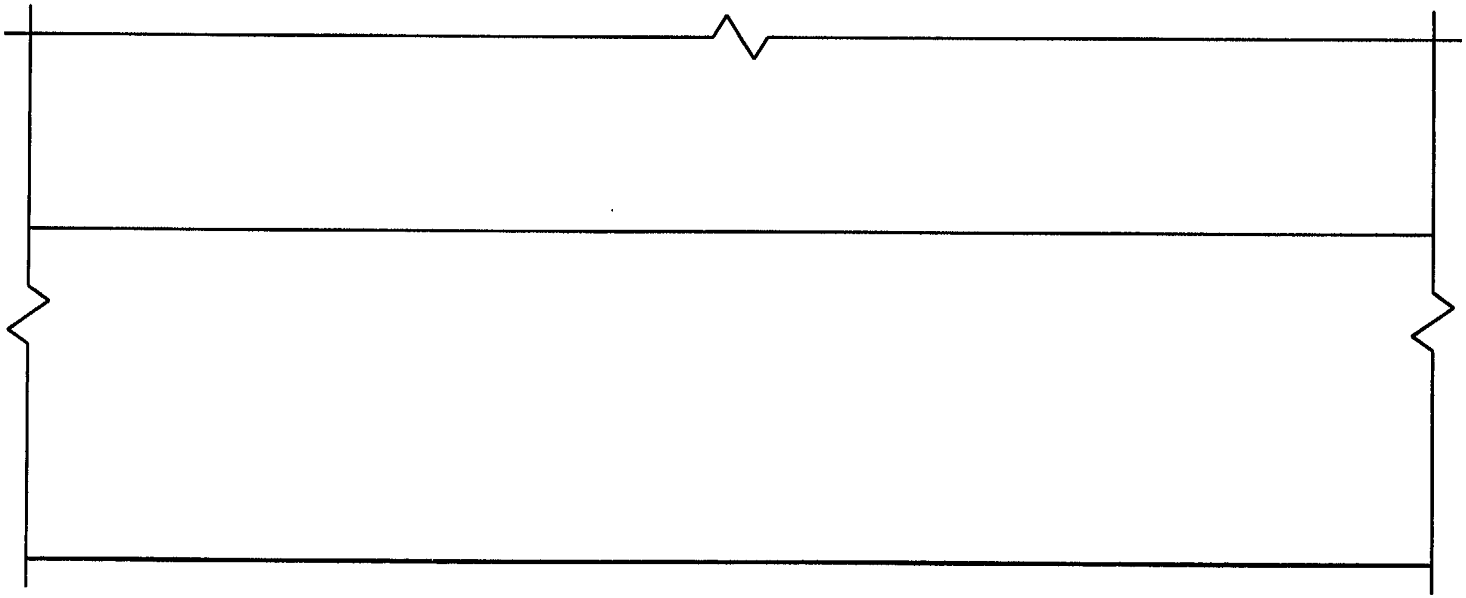


FIG 9.07EE

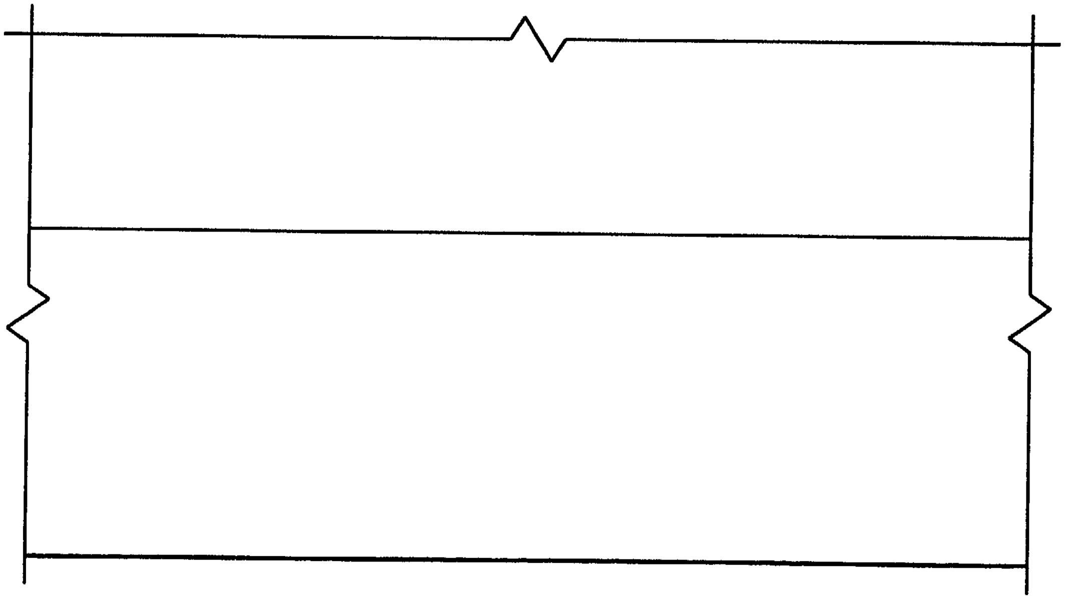


Fig 9.07EF

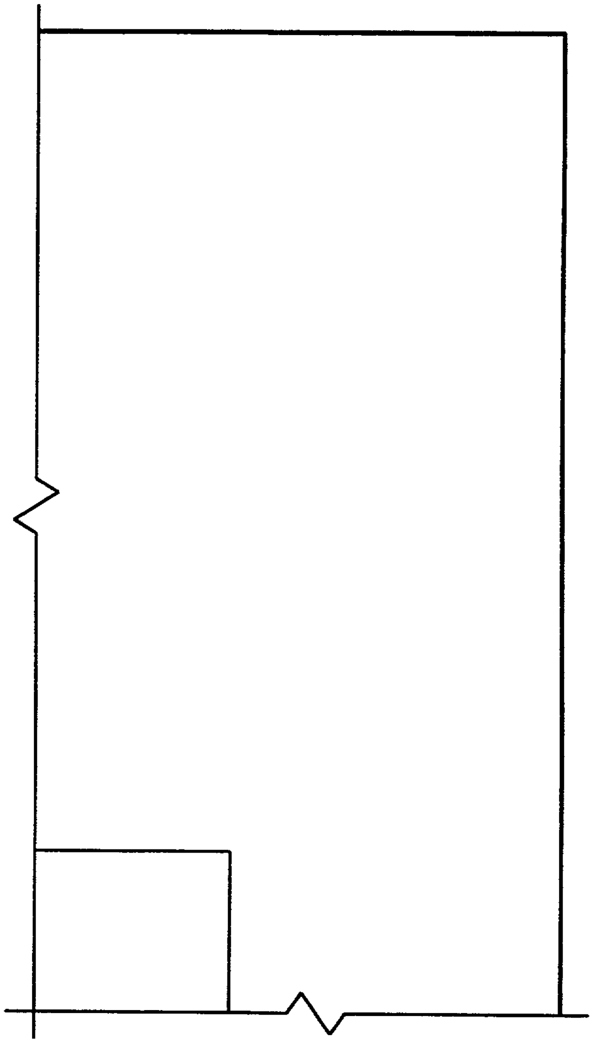


Fig 9.07EG

9.08AA	9.08AB	9.08AC
9.08BA	9.08BB	9.08BC
9.08CA	9.08CB	9.08CC

Fig 9.08

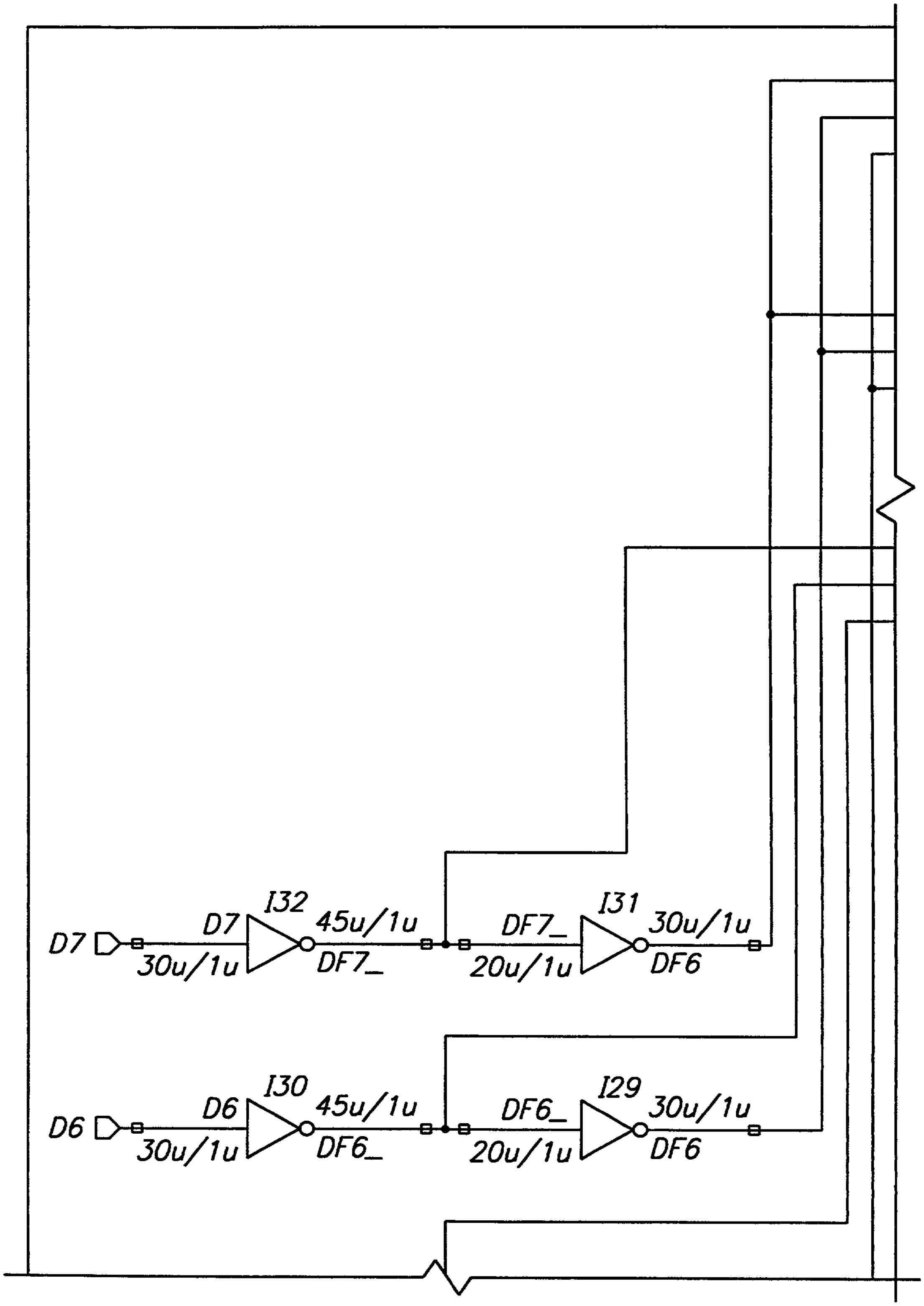

D7
D7
30u/1u
I32
45u/1u
DF7_
DF7_
20u/1u
I31
30u/1u
DF6
D6
D6
30u/1u
I30
45u/1u
DF6_
DF6_
20u/1u
I29
30u/1u
DF6

Fig 9.08AA

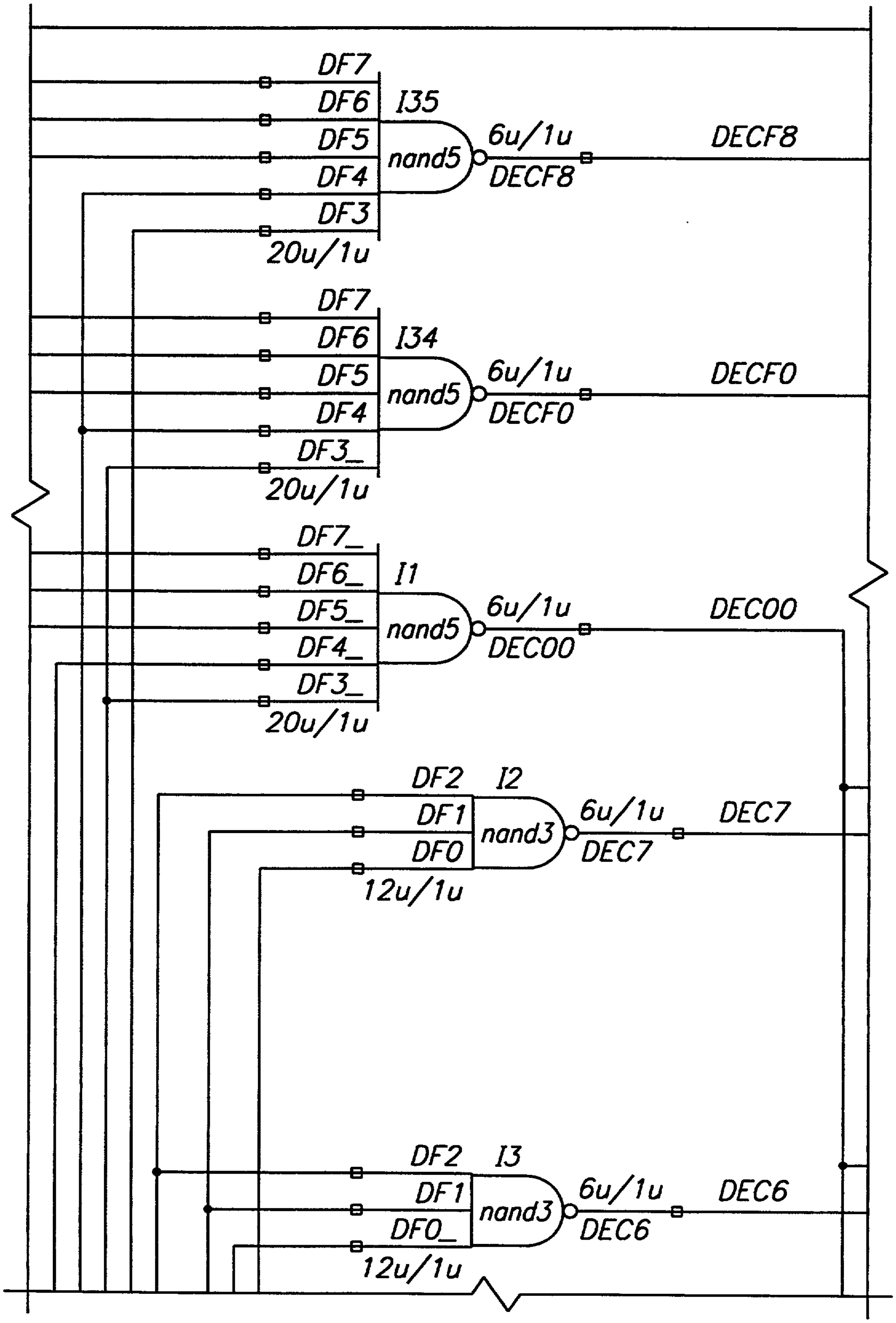

DF7
DF6
I35
DF5
6u/1u
DECF8
nand5
DF4
DECF8
DF3
20u/1u
DF7
DF6
I34
DF5
6u/1u
DECF0
nand5
DF4
DECF0
DF3_
20u/1u
DF7_
DF6_
I1
DF5_
6u/1u
DEC00
nand5
DF4_
DEC00
DF3_
20u/1u
DF2
I2
DF1
6u/1u
DEC7
nand3
DF0
DEC7
12u/1u
DF2
I3
DF1
6u/1u
DEC6
nand3
DF0_
DEC6
12u/1u

Fig 9.08AB

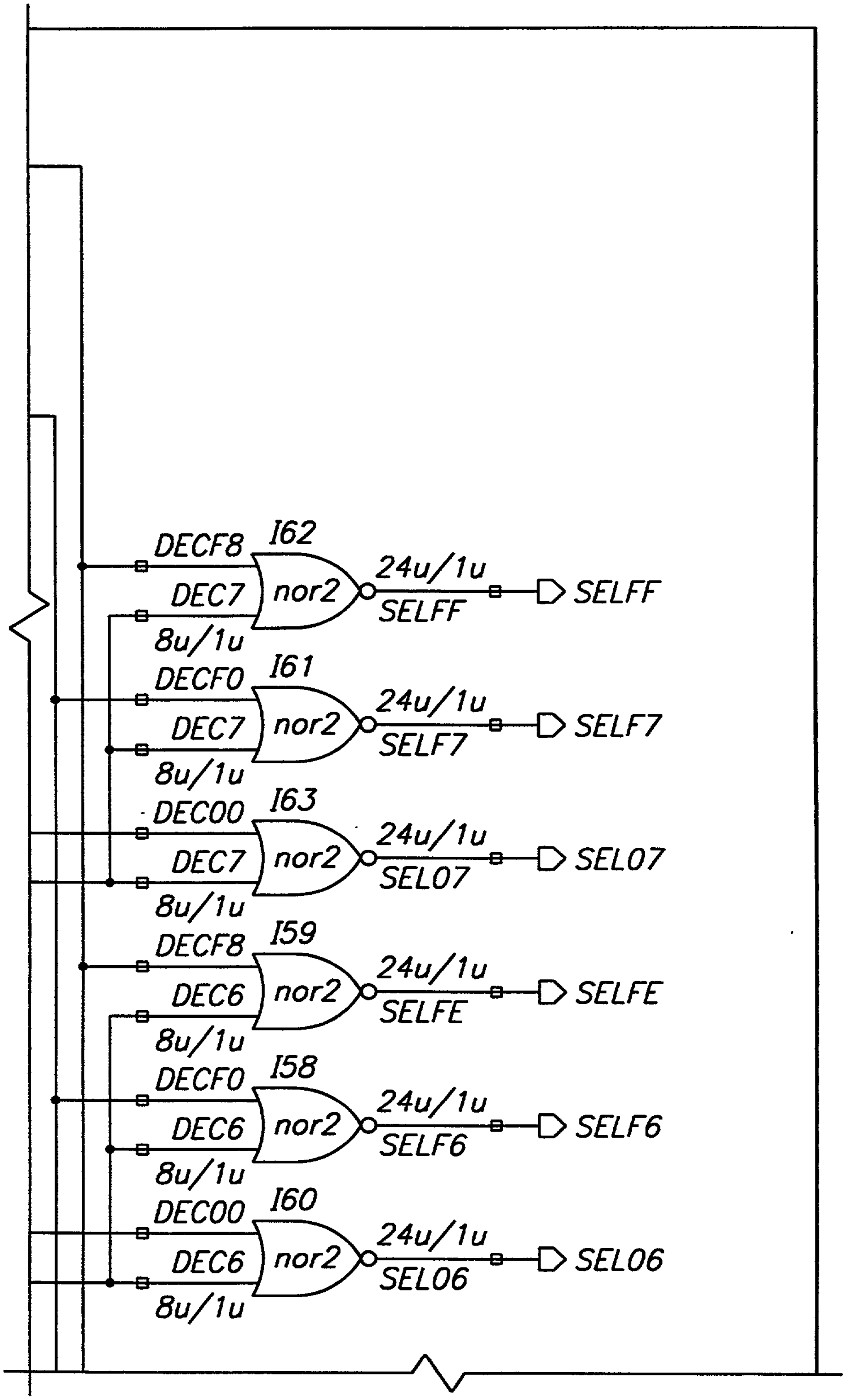

DECF8
I62
DEC7
nor2
8u/1u
24u/1u
SELFF
SELFF
DECF0
I61
DEC7
nor2
8u/1u
24u/1u
SELF7
SELF7
DEC00
I63
DEC7
nor2
8u/1u
24u/1u
SEL07
SEL07
DECF8
I59
DEC6
nor2
8u/1u
24u/1u
SELFE
SELFE
DECF0
I58
DEC6
nor2
8u/1u
24u/1u
SELF6
SELF6
DEC00
I60
DEC6
nor2
8u/1u
24u/1u
SEL06
SEL06

Fig 9.08AC

2671/3273

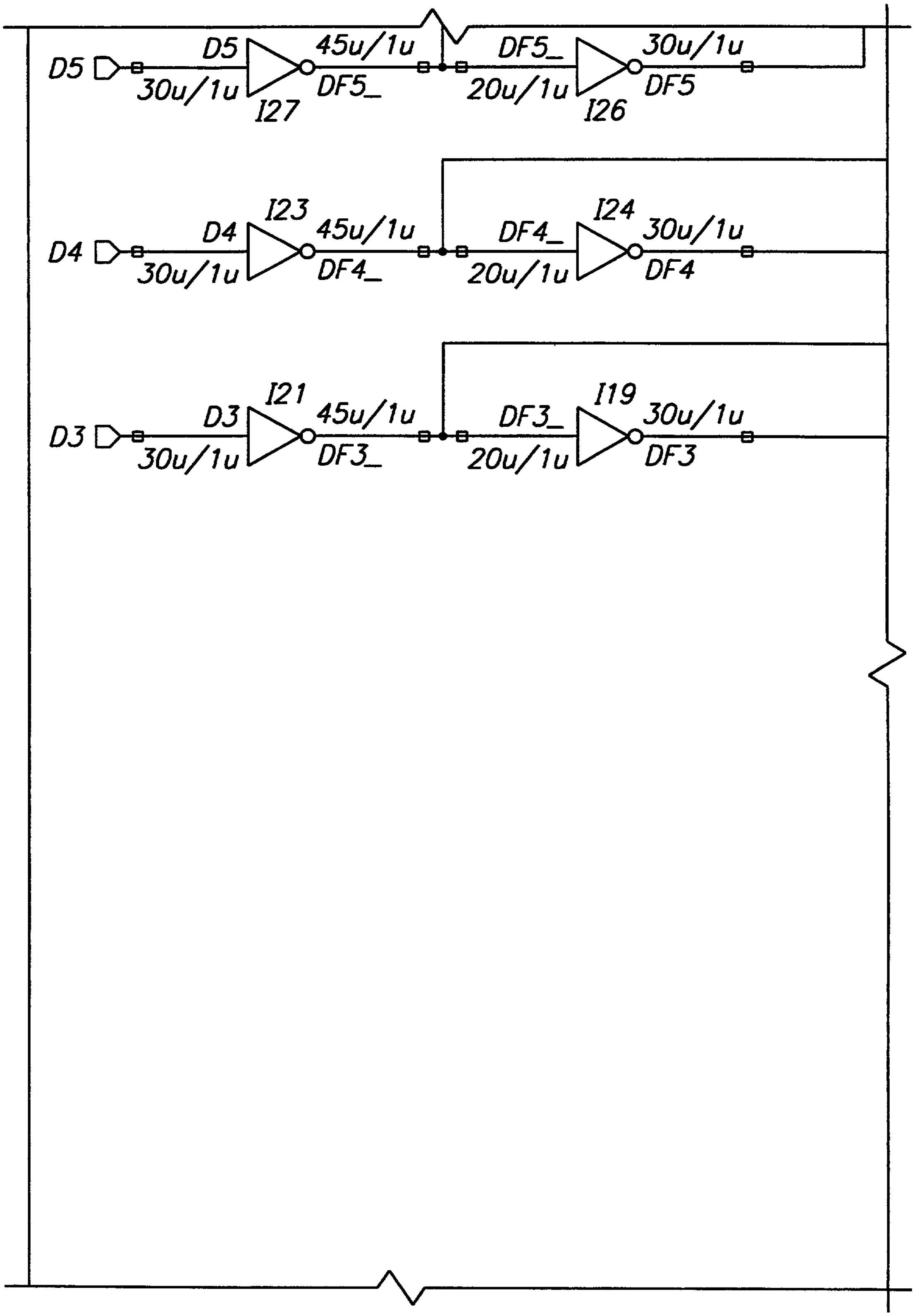


Fig 9.08BA

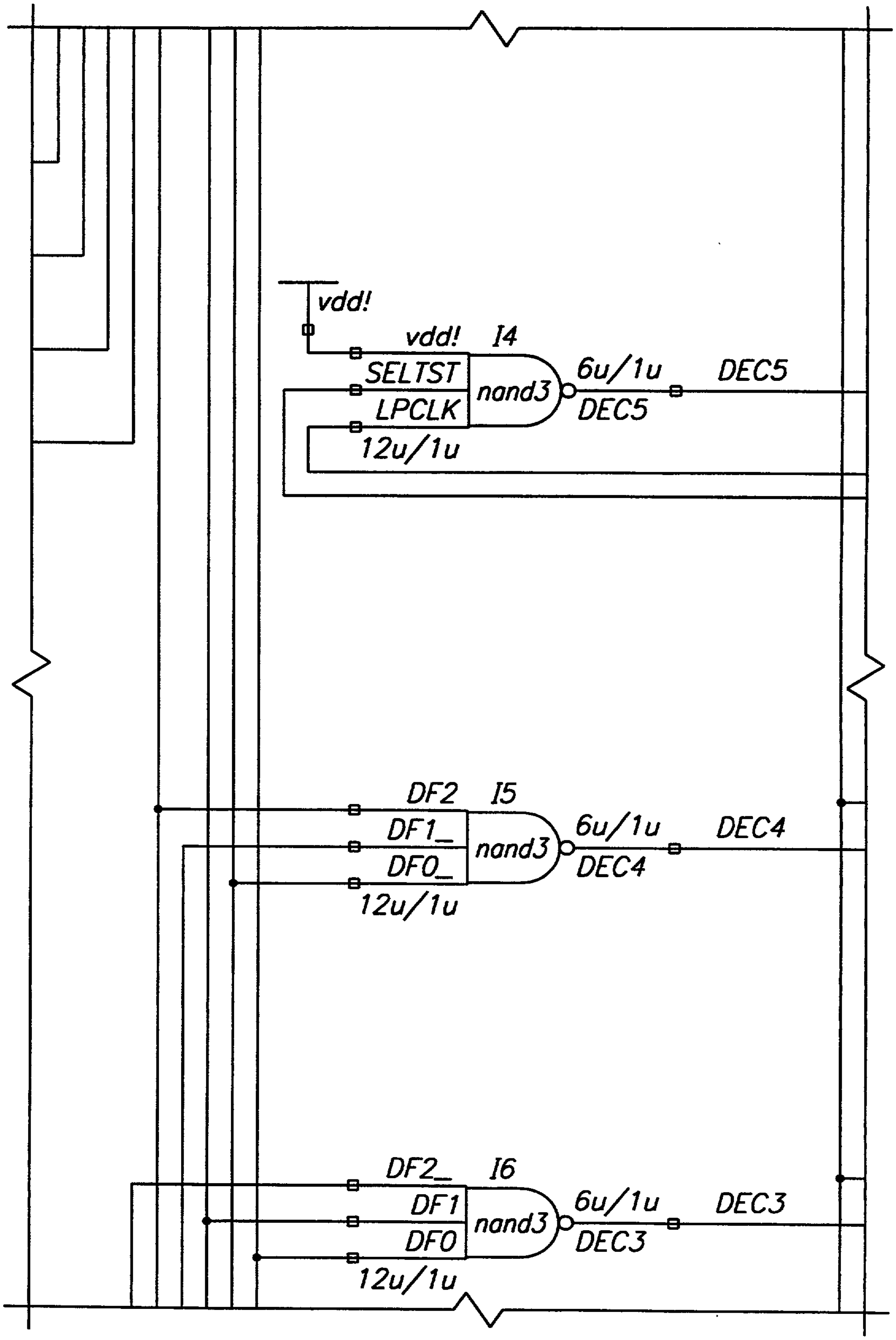

vdd!
vdd!
I4
SELTST
LPCLK
12u/1u
nand3
6u/1u
DEC5
DEC5
DF2
I5
DF1_
DF0_
12u/1u
nand3
6u/1u
DEC4
DEC4
DF2_
I6
DF1
DF0
12u/1u
nand3
6u/1u
DEC3
DEC3

Fig 9.08BB

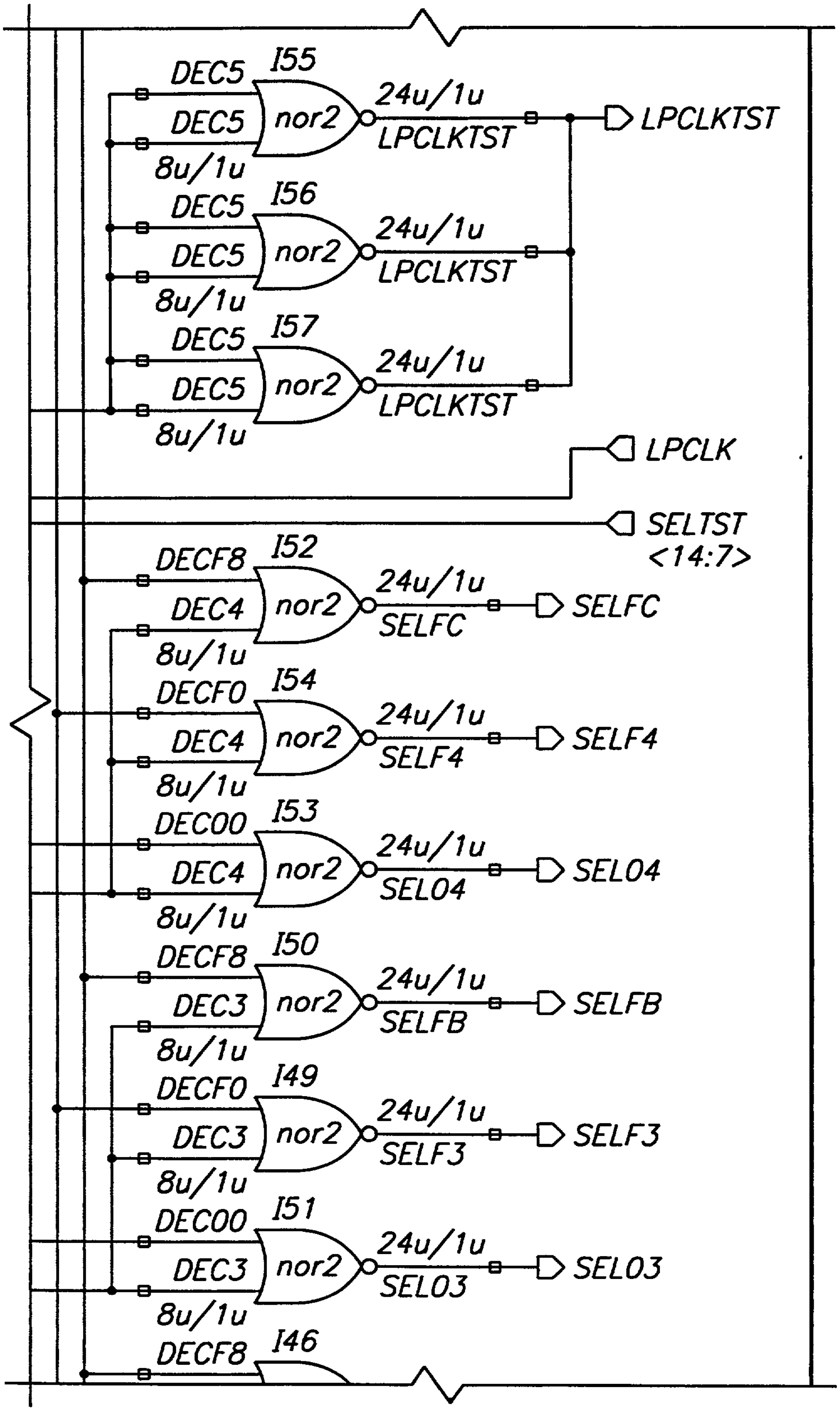

DEC5
I55
DEC5
nor2
24u/1u
LPCLKTST
8u/1u
LPCLKTST
DEC5
I56
DEC5
nor2
24u/1u
LPCLKTST
8u/1u
DEC5
I57
DEC5
nor2
24u/1u
LPCLKTST
8u/1u
LPCLK
SELTST
<14:7>
DECF8
I52
DEC4
nor2
24u/1u
SELFC
8u/1u
SELFC
DECF0
I54
DEC4
nor2
24u/1u
SELF4
8u/1u
SELF4
DEC00
I53
DEC4
nor2
24u/1u
SEL04
8u/1u
SEL04
DECF8
I50
DEC3
nor2
24u/1u
SELFB
8u/1u
SELFB
DECF0
I49
DEC3
nor2
24u/1u
SELF3
8u/1u
SELF3
DEC00
I51
DEC3
nor2
24u/1u
SEL03
8u/1u
SEL03
DECF8
I46

Fig 9.08BC

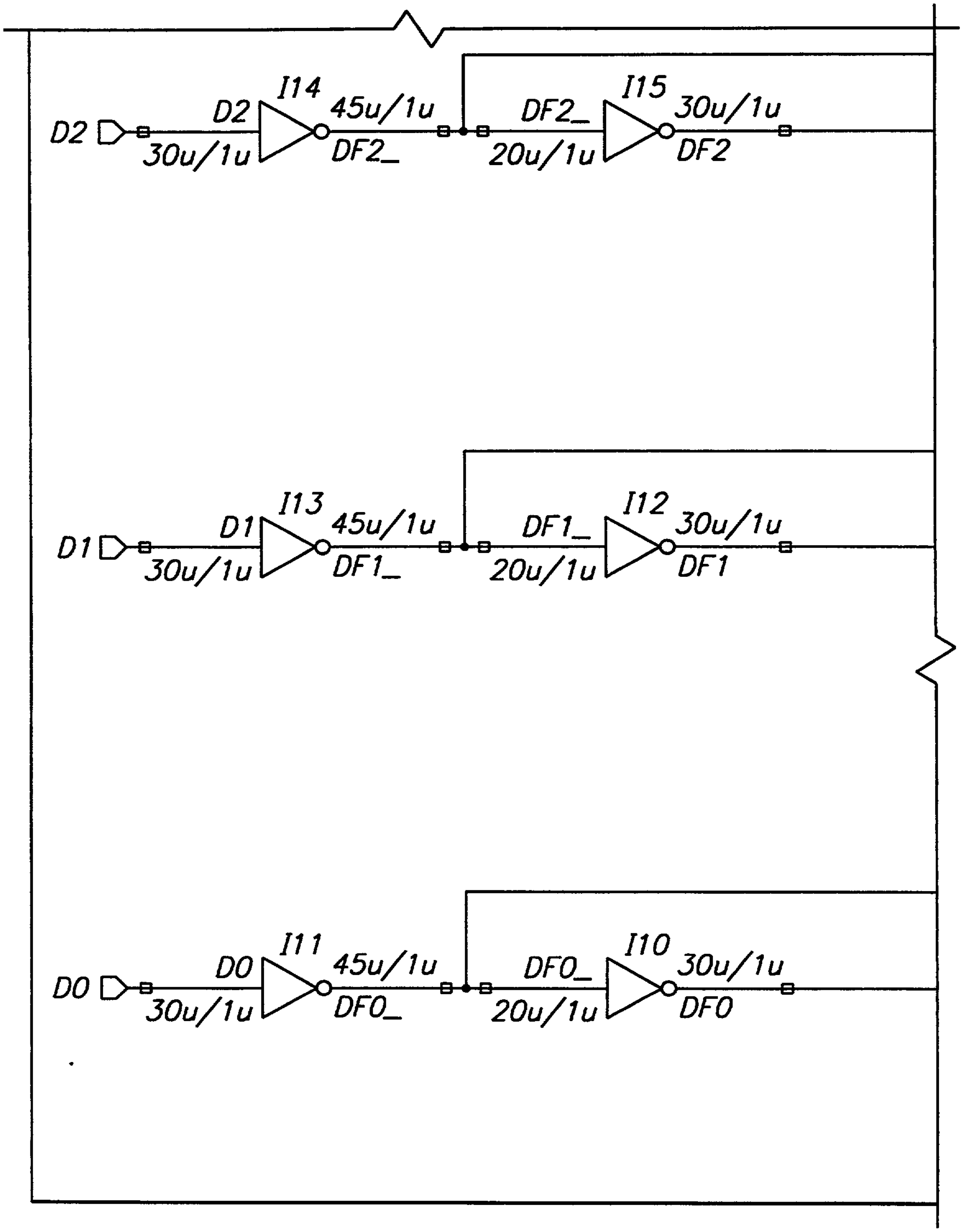

D2
D2
I14
45u/1u
30u/1u
DF2_
DF2_
I15
30u/1u
20u/1u
DF2
D1
D1
I13
45u/1u
30u/1u
DF1_
DF1_
I12
30u/1u
20u/1u
DF1
D0
D0
I11
45u/1u
30u/1u
DF0_
DF0_
I10
30u/1u
20u/1u
DF0

Fig 9.08CA

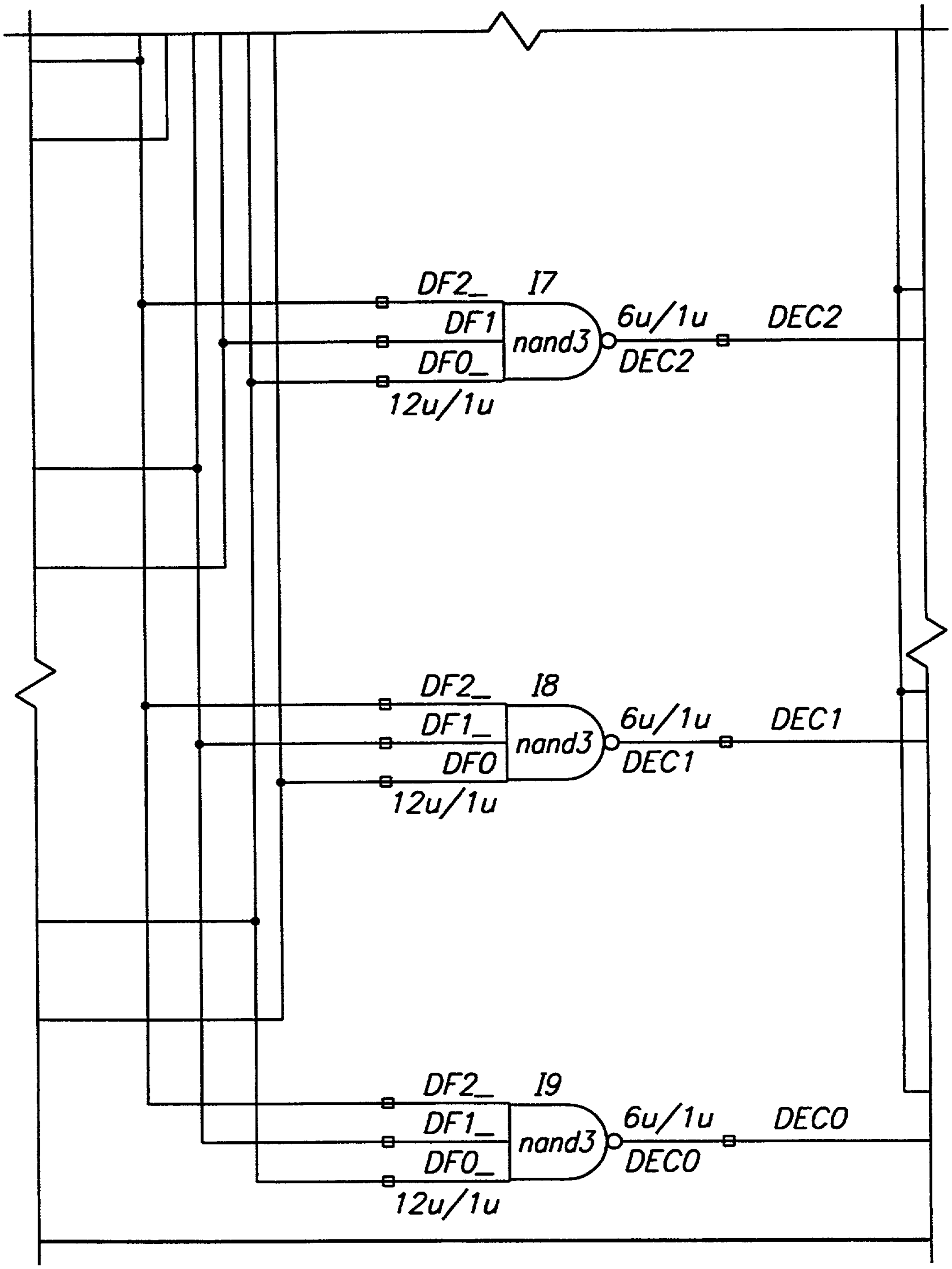

DF2_
I7
DF1
nand3
6u/1u
DEC2
DF0_
DEC2
12u/1u
DF2_
I8
DF1_
nand3
6u/1u
DEC1
DF0
DEC1
12u/1u
DF2_
I9
DF1_
nand3
6u/1u
DEC0
DF0_
DEC0
12u/1u

Fig 9.08CB

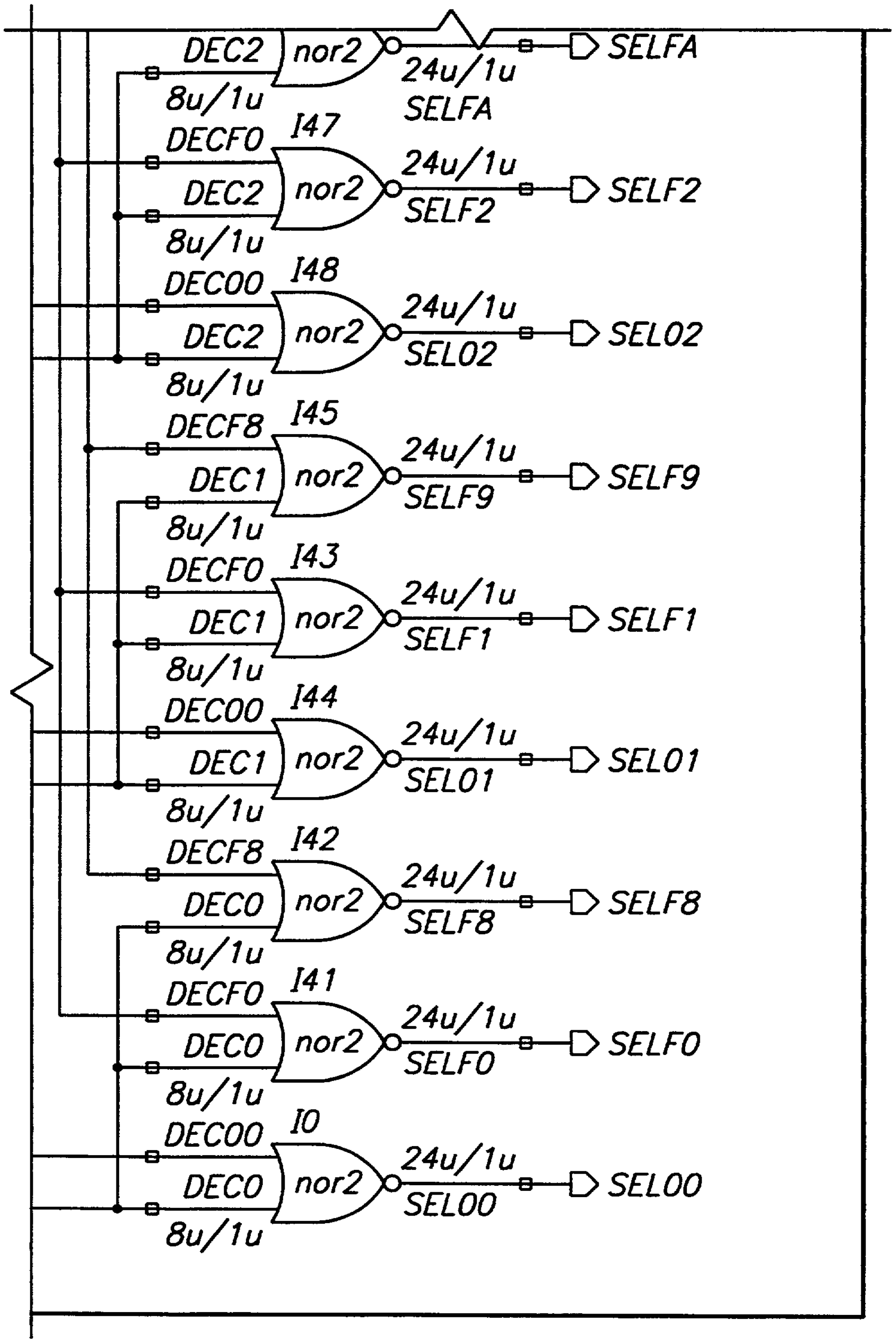

DEC2
nor2
8u/1u
24u/1u
SELFA
SELFA
I47
DECF0
DEC2
nor2
8u/1u
24u/1u
SELF2
SELF2
I48
DEC00
DEC2
nor2
8u/1u
24u/1u
SEL02
SEL02
I45
DECF8
DEC1
nor2
8u/1u
24u/1u
SELF9
SELF9
I43
DECF0
DEC1
nor2
8u/1u
24u/1u
SELF1
SELF1
I44
DEC00
DEC1
nor2
8u/1u
24u/1u
SEL01
SEL01
I42
DECF8
DEC0
nor2
8u/1u
24u/1u
SELF8
SELF8
I41
DECF0
DEC0
nor2
8u/1u
24u/1u
SELF0
SELF0
I0
DEC00
DEC0
nor2
8u/1u
24u/1u
SEL00
SEL00

Fig 9.08CC

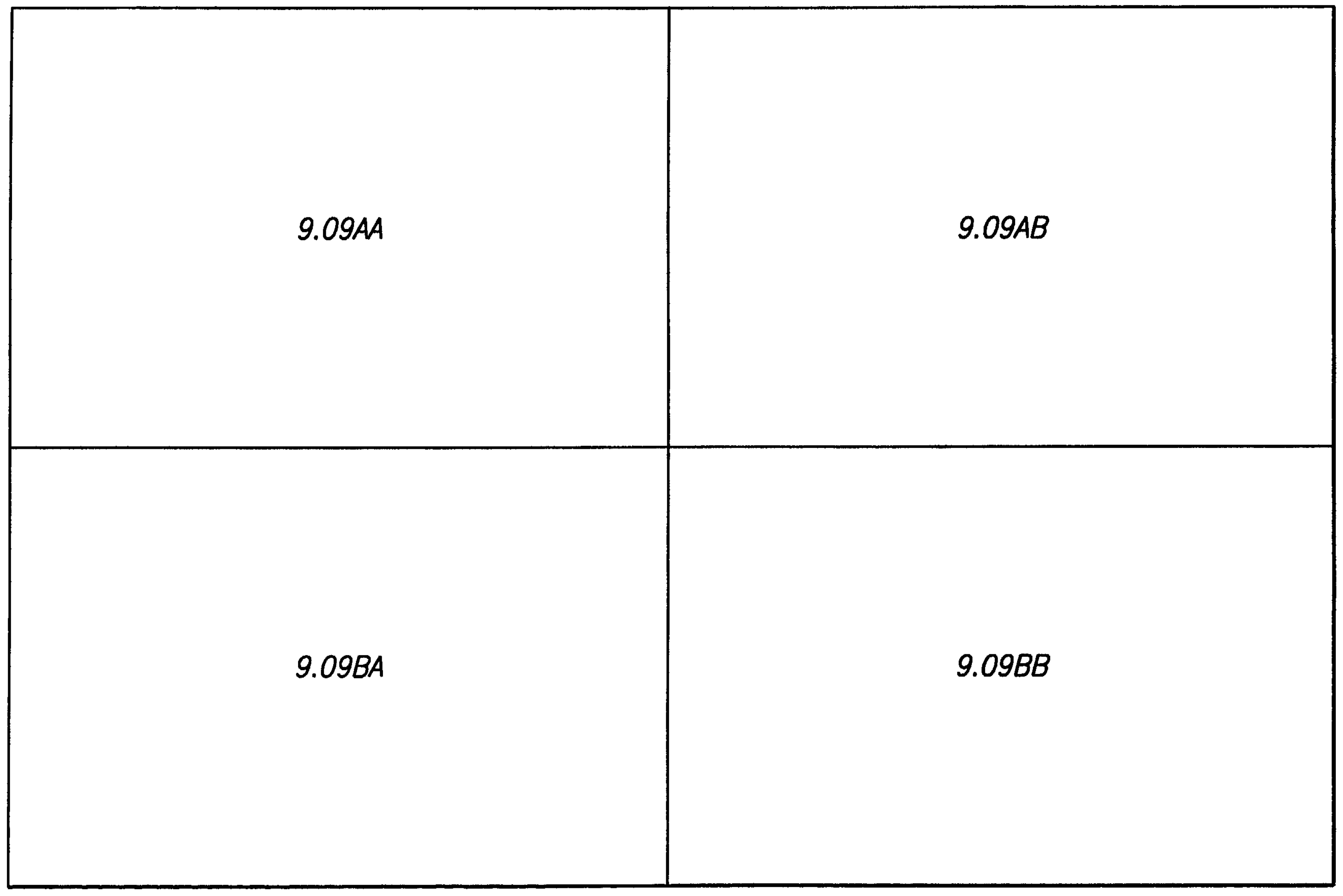


FIG 9.09

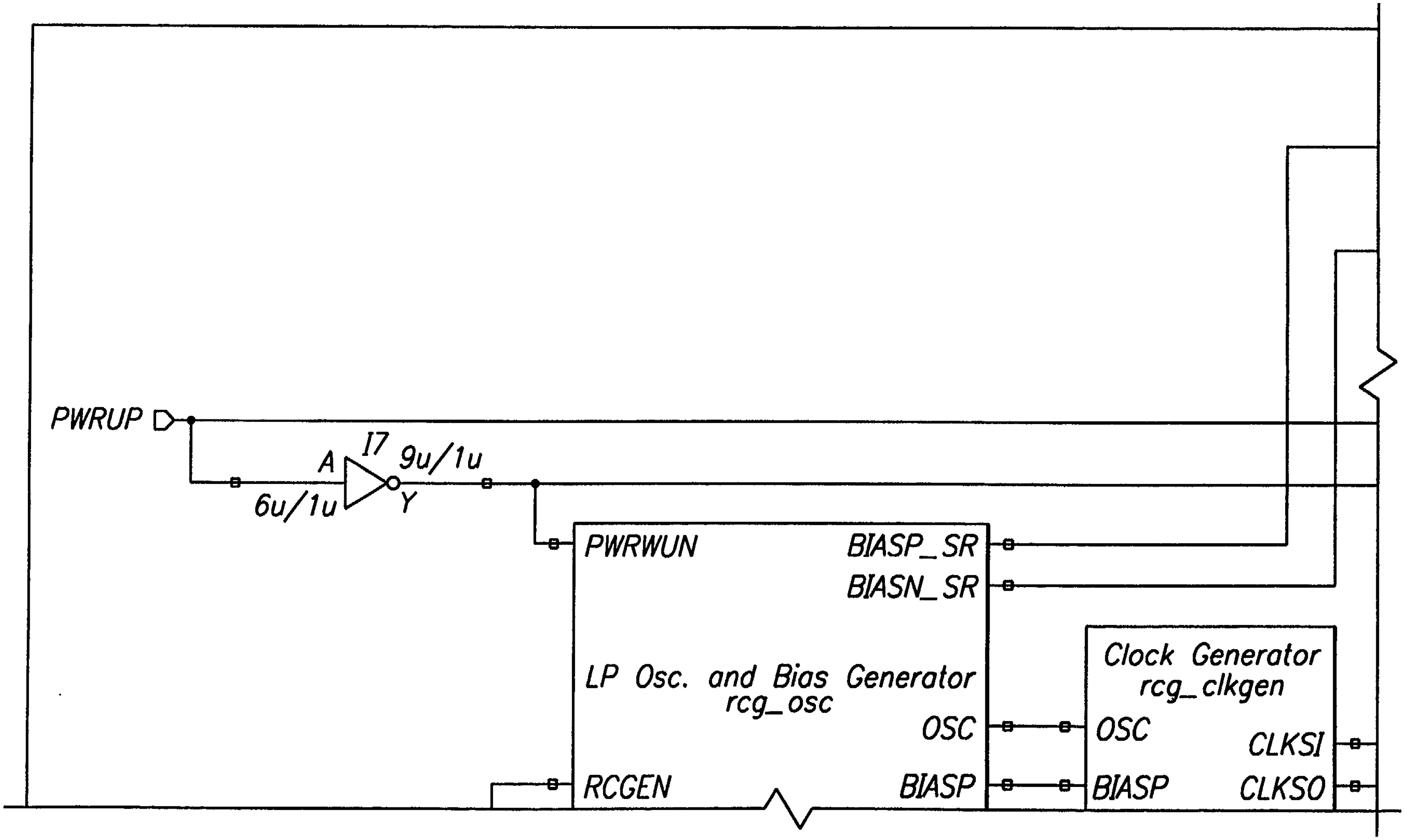

PWRUP
A
I7
9u/1u
6u/1u
Y
PWRWUN
BIASP_SR
BIASN_SR
LP Osc. and Bias Generator
rcg_osc
OSC
RCGEN
BIASP
Clock Generator
rcg_clkgen
OSC
CLKSI
BIASP
CLKSO

Fig 9.09AA

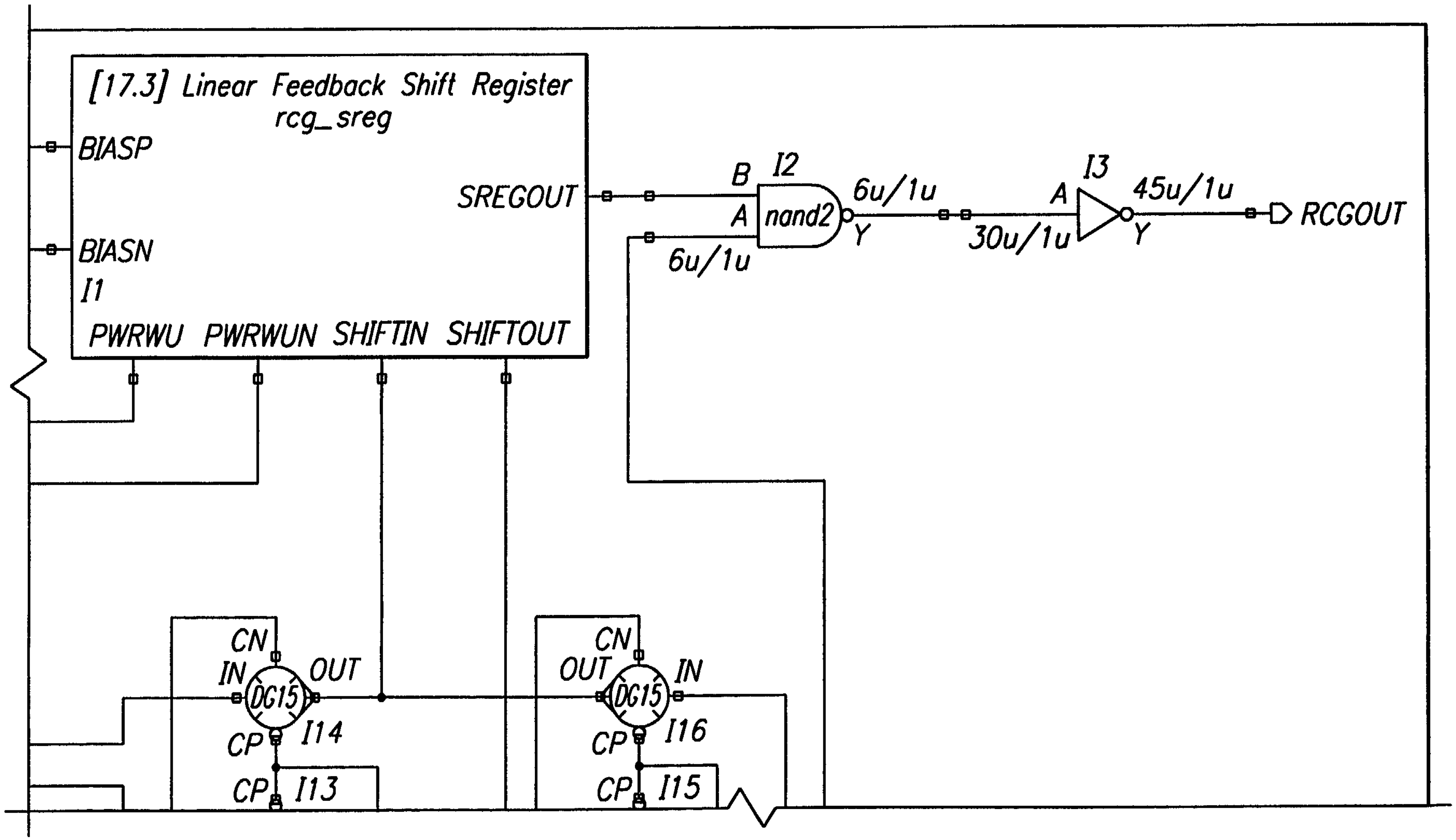

[17.3] Linear Feedback Shift Register
rcg_sreg
BIASP
BIASN
I1
PWRWU
PWRWUN
SHIFTIN
SHIFTOUT
SREGOUT
B
A
I2
nand2
Y
6u/1u
6u/1u
30u/1u
A
I3
Y
45u/1u
RCGOUT
CN
IN
OUT
DG15
CP
I14
CP
I13
CN
OUT
IN
DG15
CP
I16
CP
I15

Fig 9.09AB

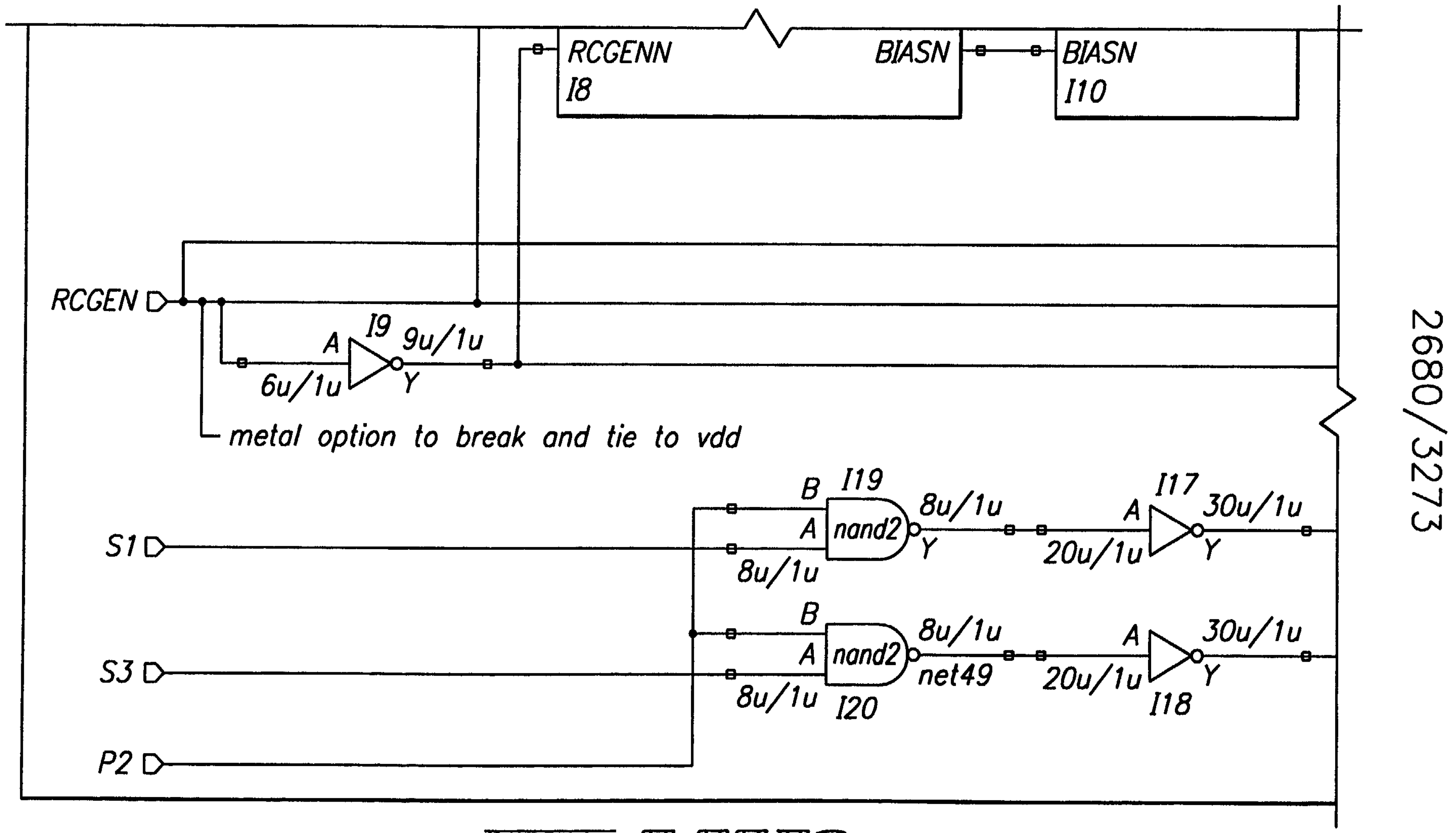

RCGENN
I8
BIASN
BIASN
I10
RCGEN
A
I9
9u/1u
6u/1u
Y
metal option to break and tie to vdd
S1
S3
P2
B
I19
A
nand2
8u/1u
Y
8u/1u
A
I17
30u/1u
20u/1u
Y
B
A
nand2
8u/1u
net49
8u/1u
I20
A
30u/1u
20u/1u
Y
I18
2680/3273

Fig 9.09BA

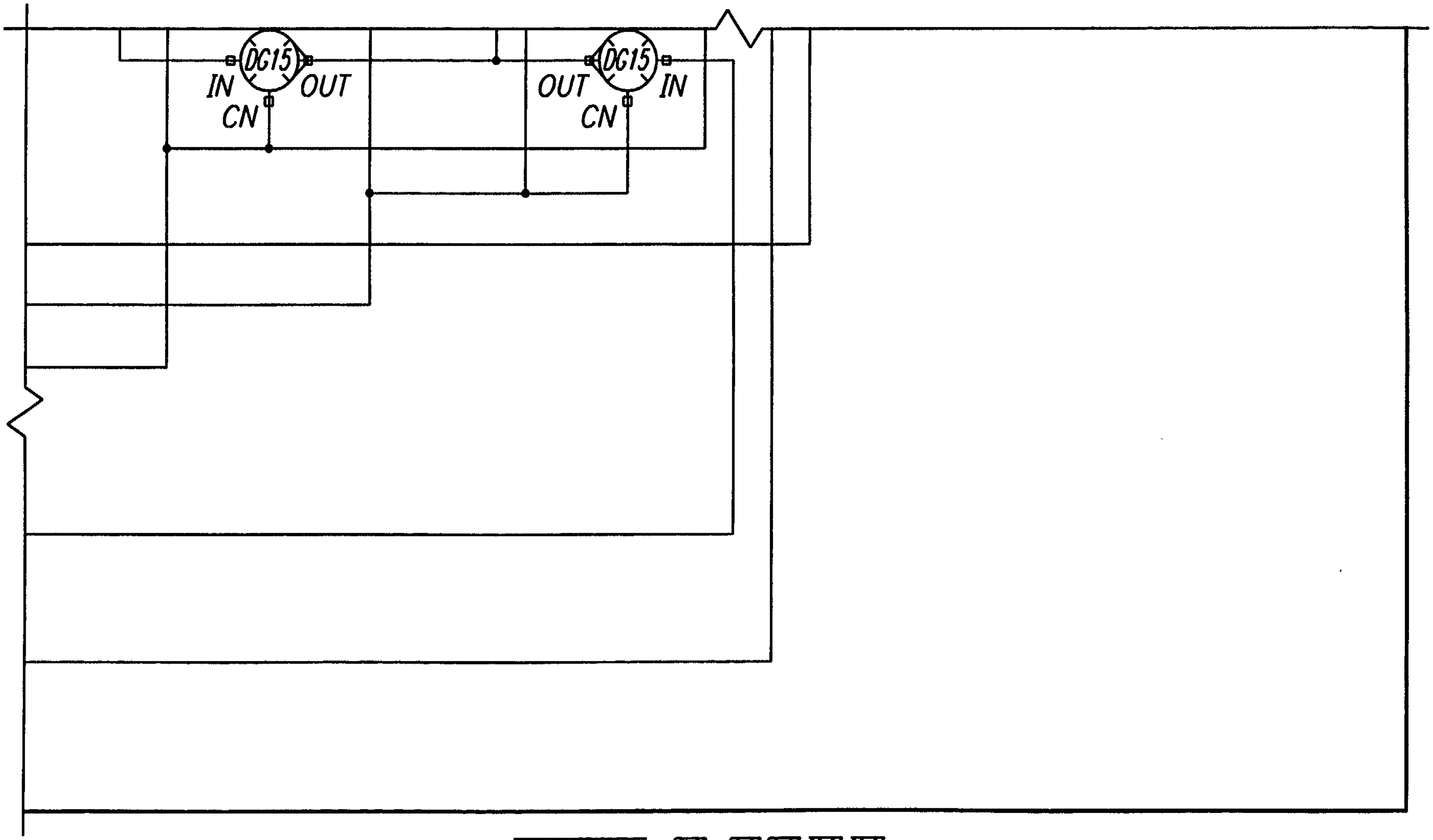


Fig 9.09BB

9.0901AA	9.0901AB	9.0901AC	9.0901AD	9.0901AE	9.0901AF	9.0901AG	9.0901AH
9.0901BA	9.0901BB	9.0901BC	9.0901BD	9.0901BE	9.0901BF	9.0901BG	9.0901BH
9.0901CA	9.0901CB	9.0901CC	9.0901CD	9.0901CE	9.0901CF	9.0901CG	9.0901CH

Fig 9.0901

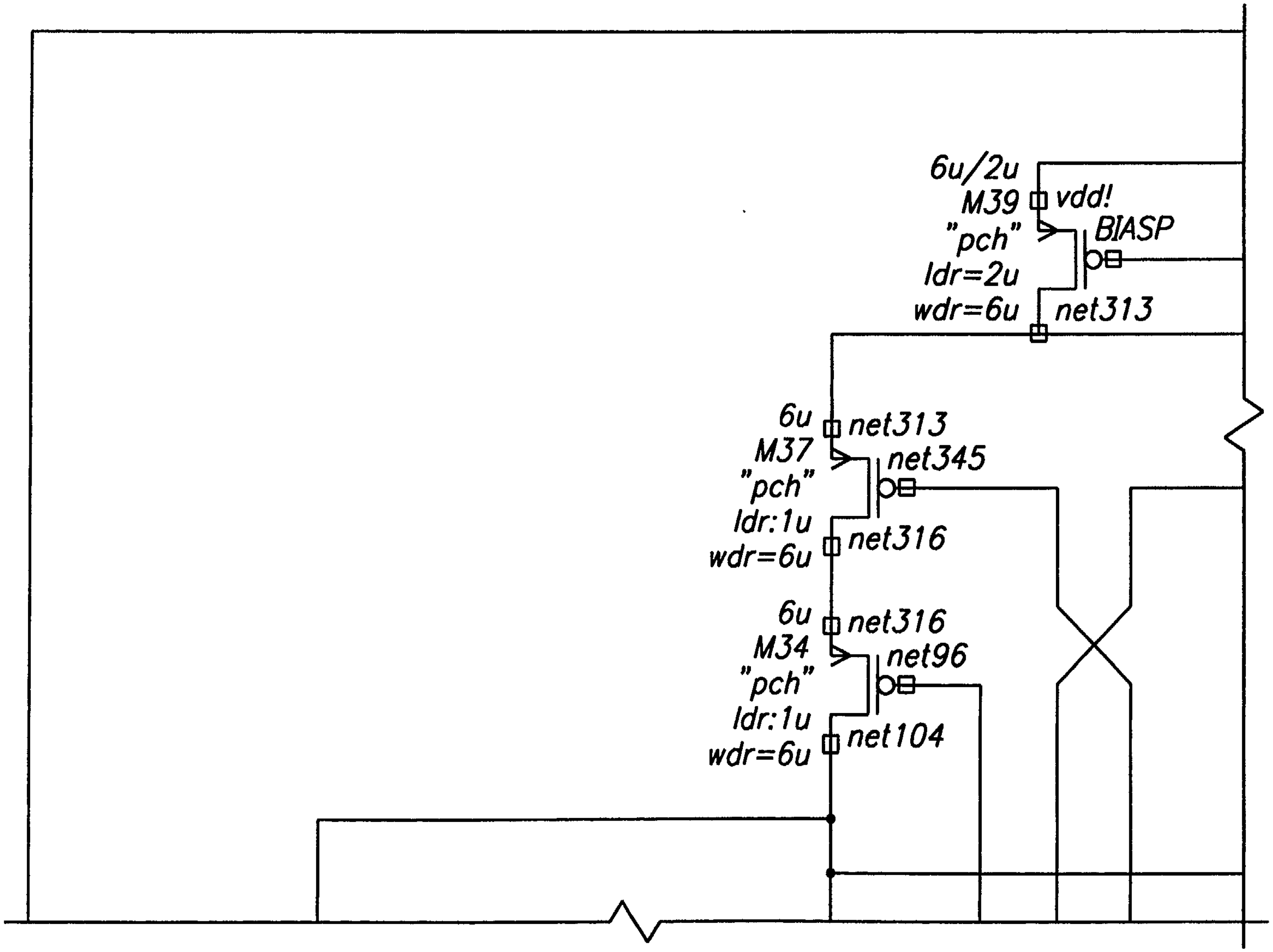

6u/2u
M39
"pch"
ldr=2u
wdr=6u
vdd!
BIASP
net313
6u
M37
"pch"
ldr:1u
wdr=6u
net313
net345
net316
6u
M34
"pch"
ldr:1u
wdr=6u
net316
net96
net104

FIG 9.0901AA

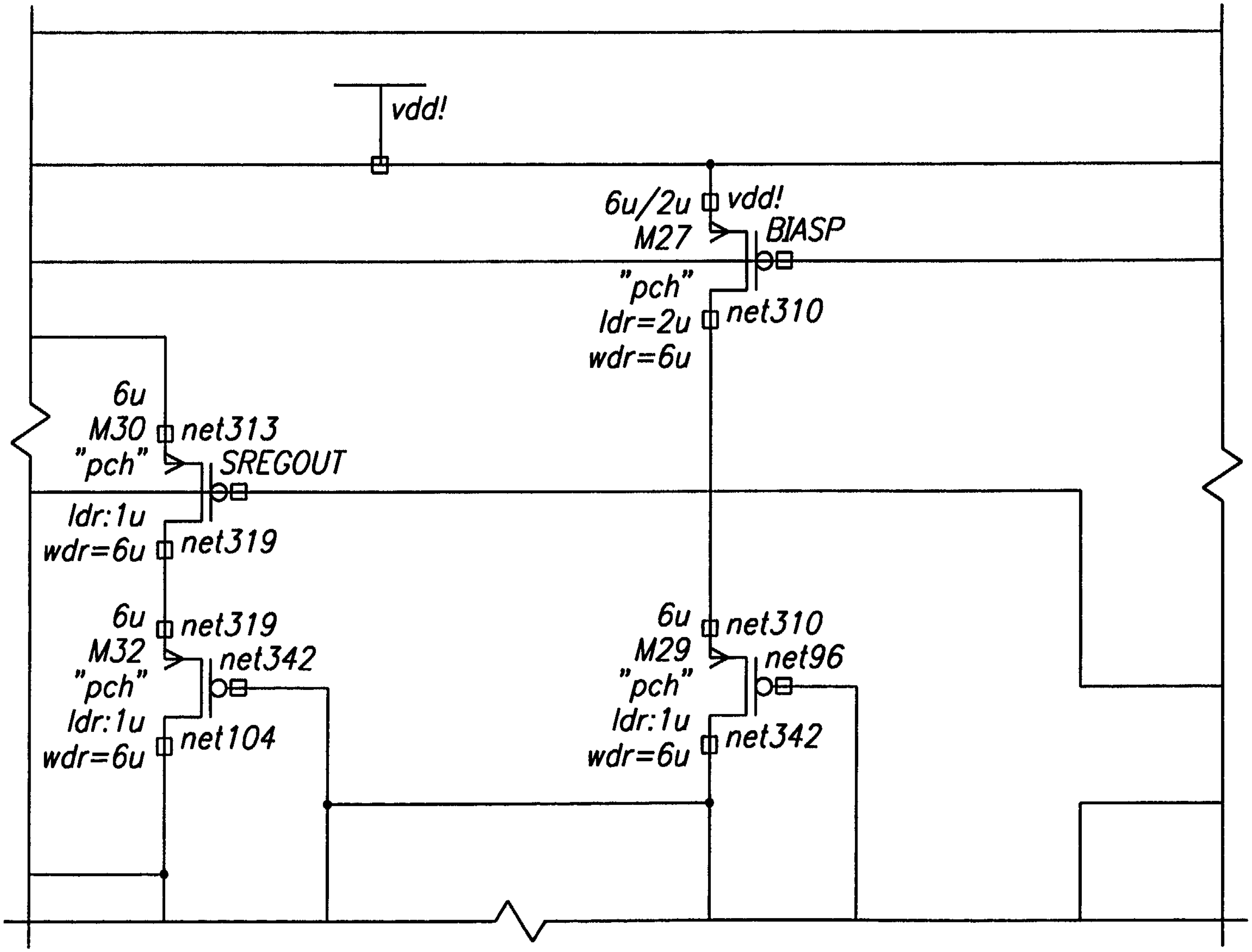
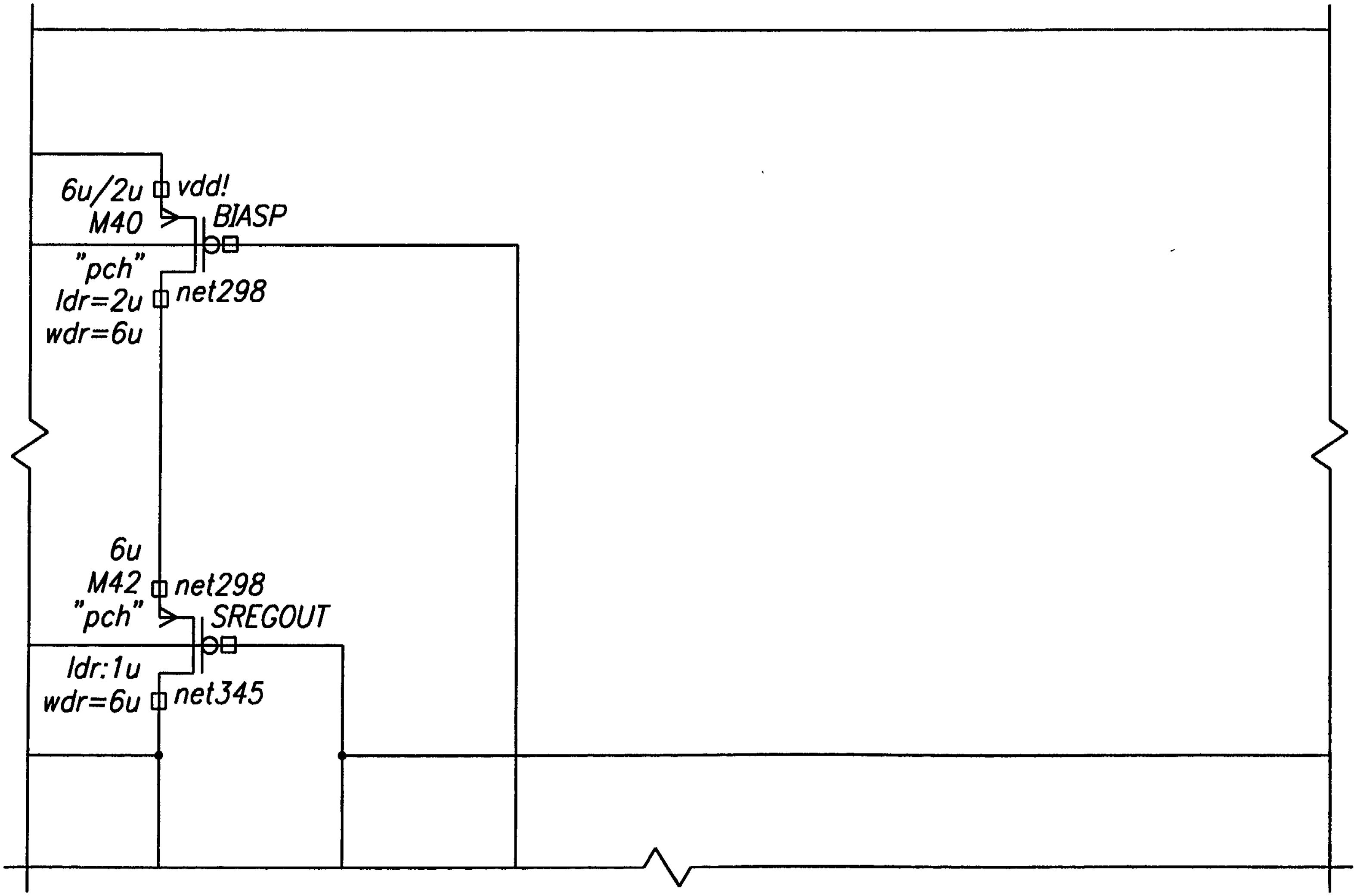

vdd!
6u/2u
M27
"pch"
ldr=2u
wdr=6u
vdd!
BIASP
net310
6u
M30
"pch"
ldr:1u
wdr=6u
net313
SREGOUT
net319
6u
M32
"pch"
ldr:1u
wdr=6u
net319
net342
net104
6u
M29
"pch"
ldr:1u
wdr=6u
net310
net96
net342

Fig 9.0901AB



6u/2u
M40
"pch"
ldr=2u
wdr=6u
vdd!
BIASP
net298
6u
M42
"pch"
ldr:1u
wdr=6u
net298
SREGOUT
net345

Fig 9.0901AC

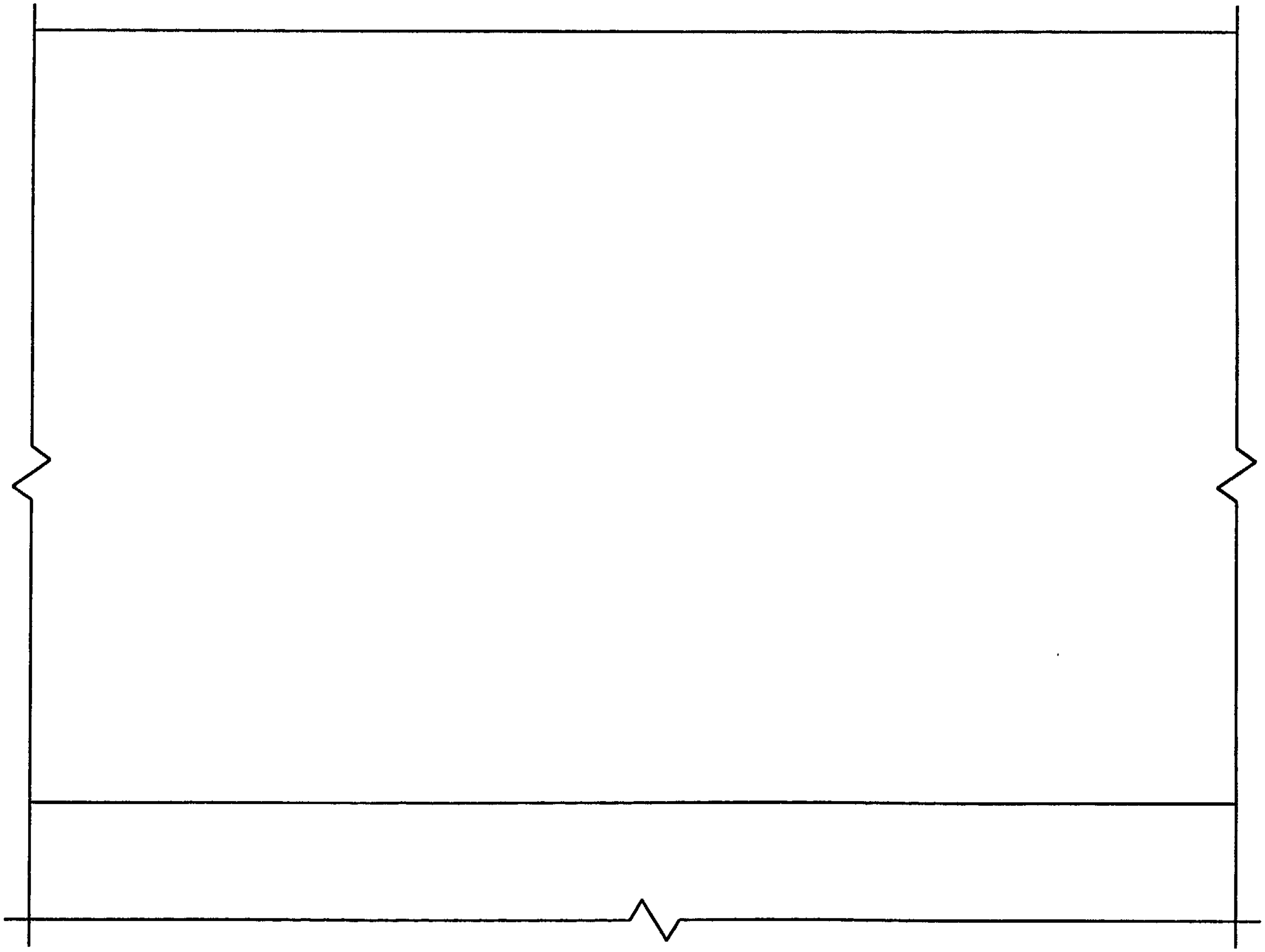


FIG 9.0901AD

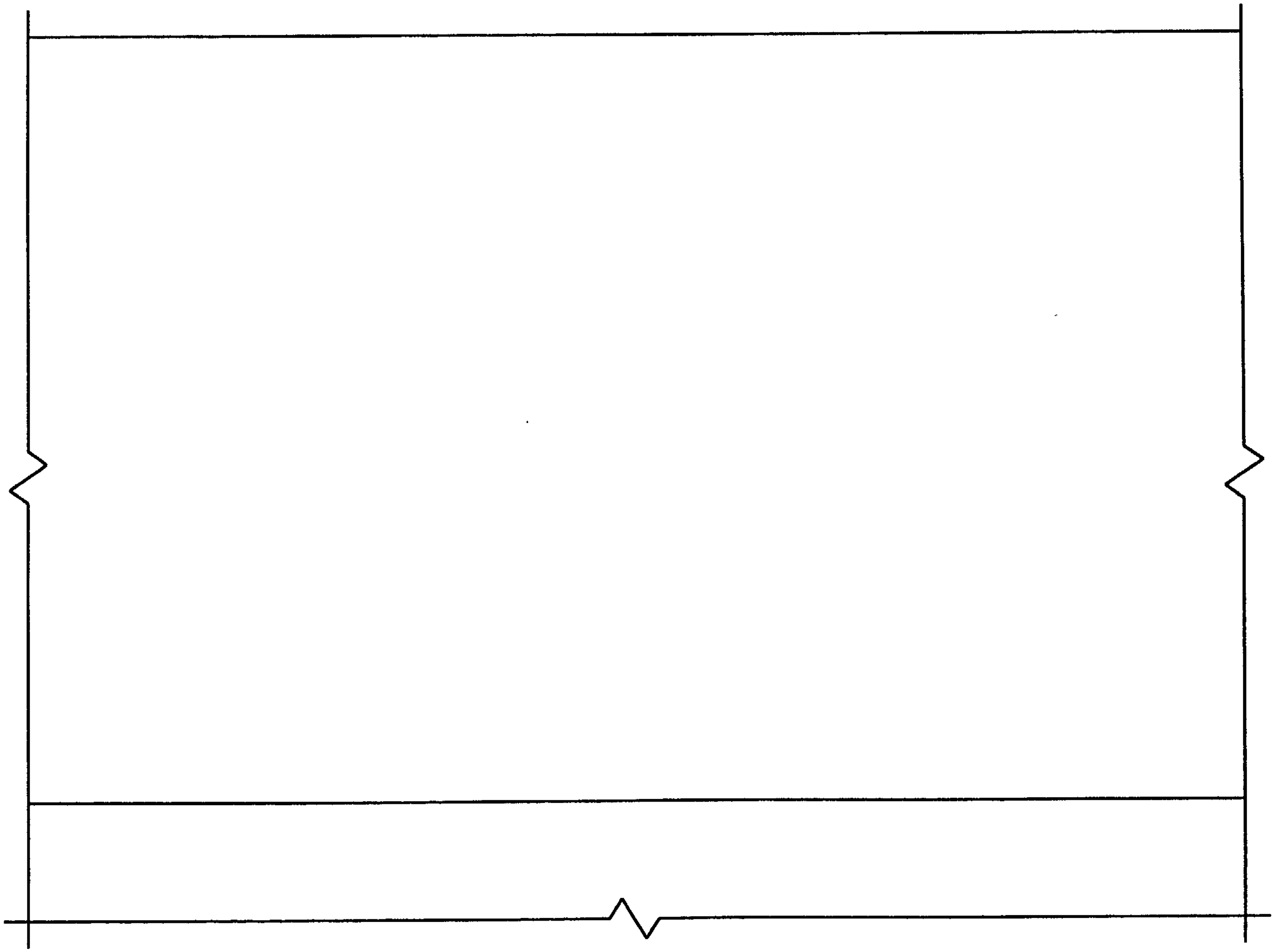


Fig 9.0901AE

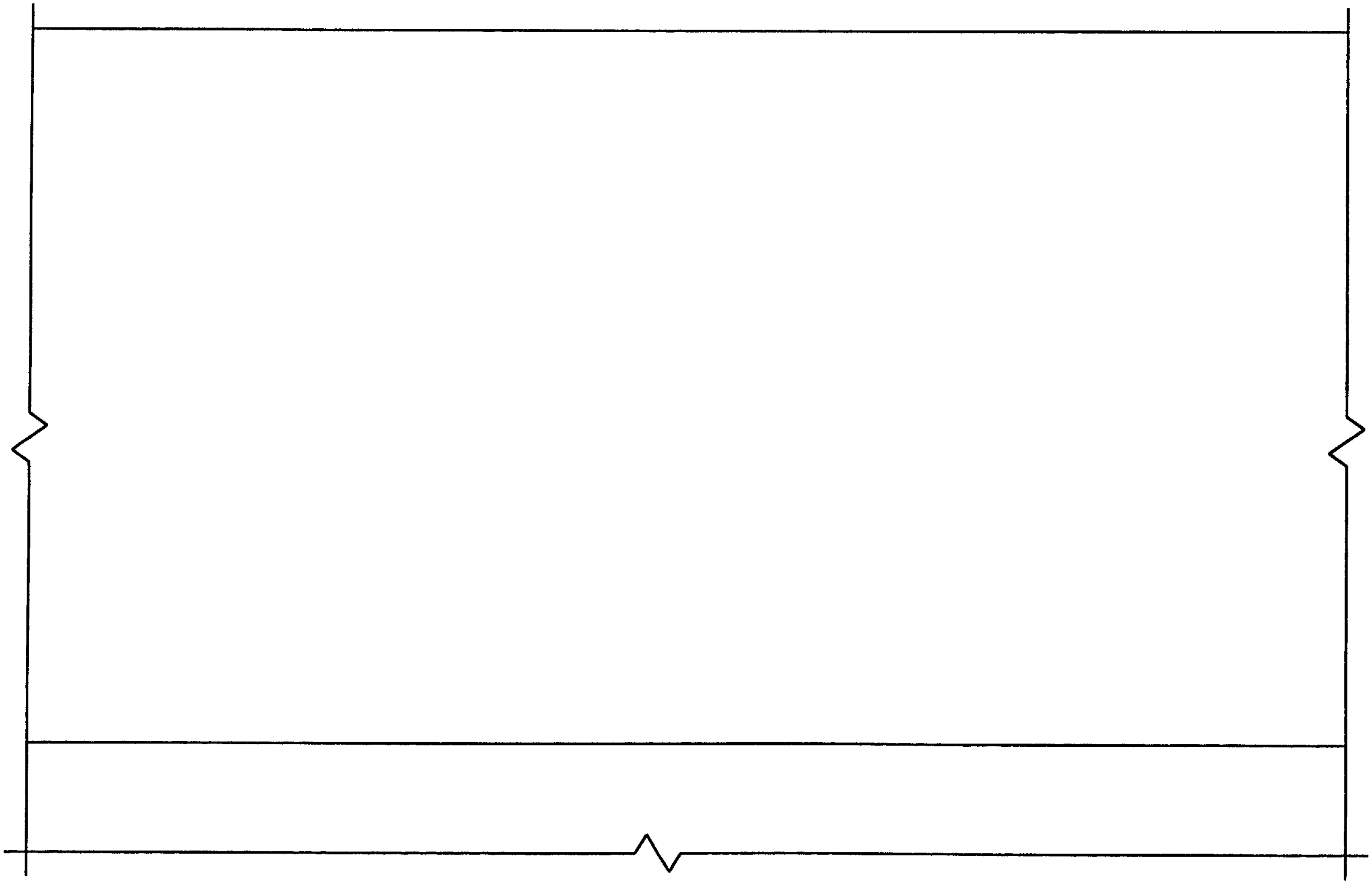


FIG. 9.0901AF

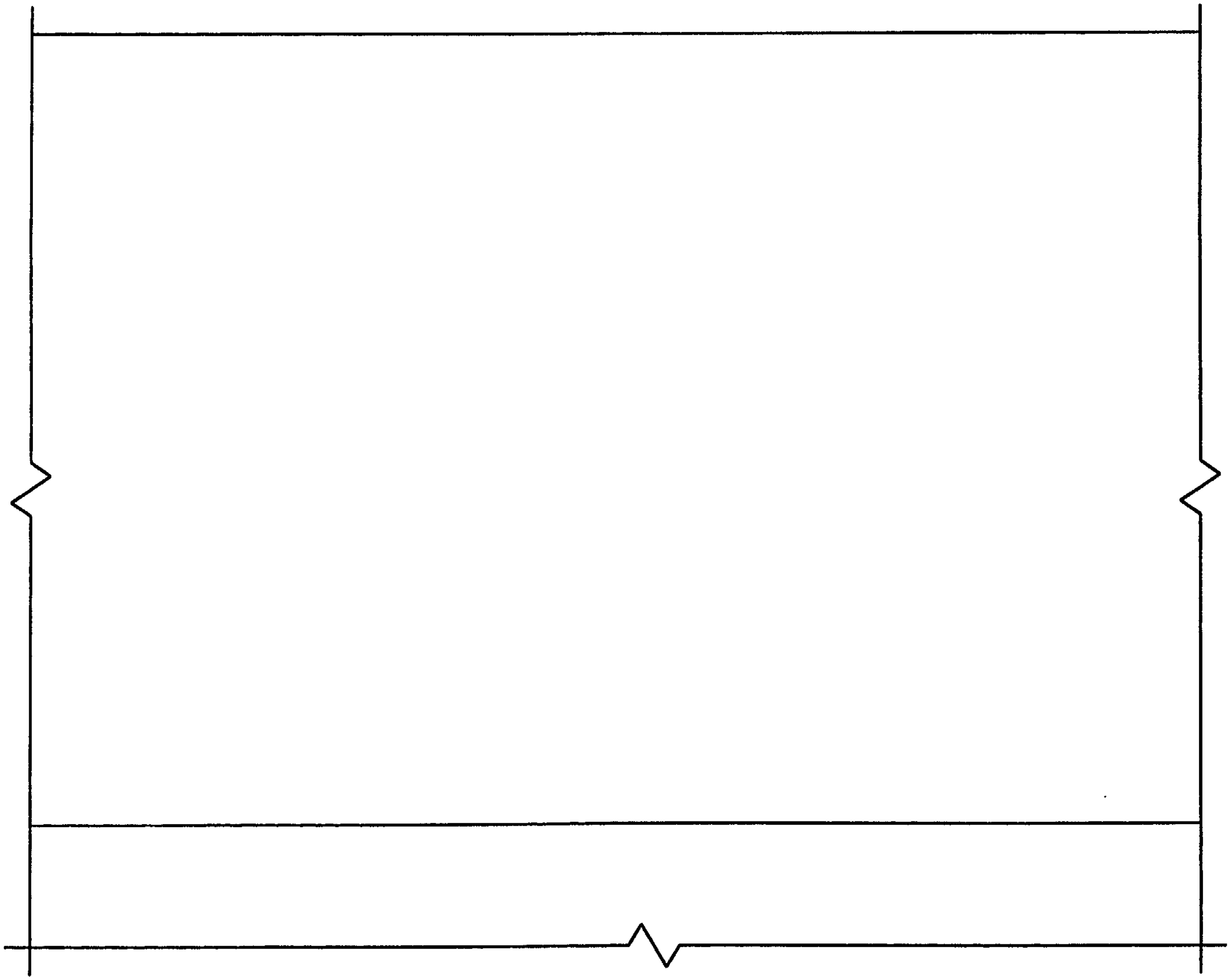


Fig 9.0901AG

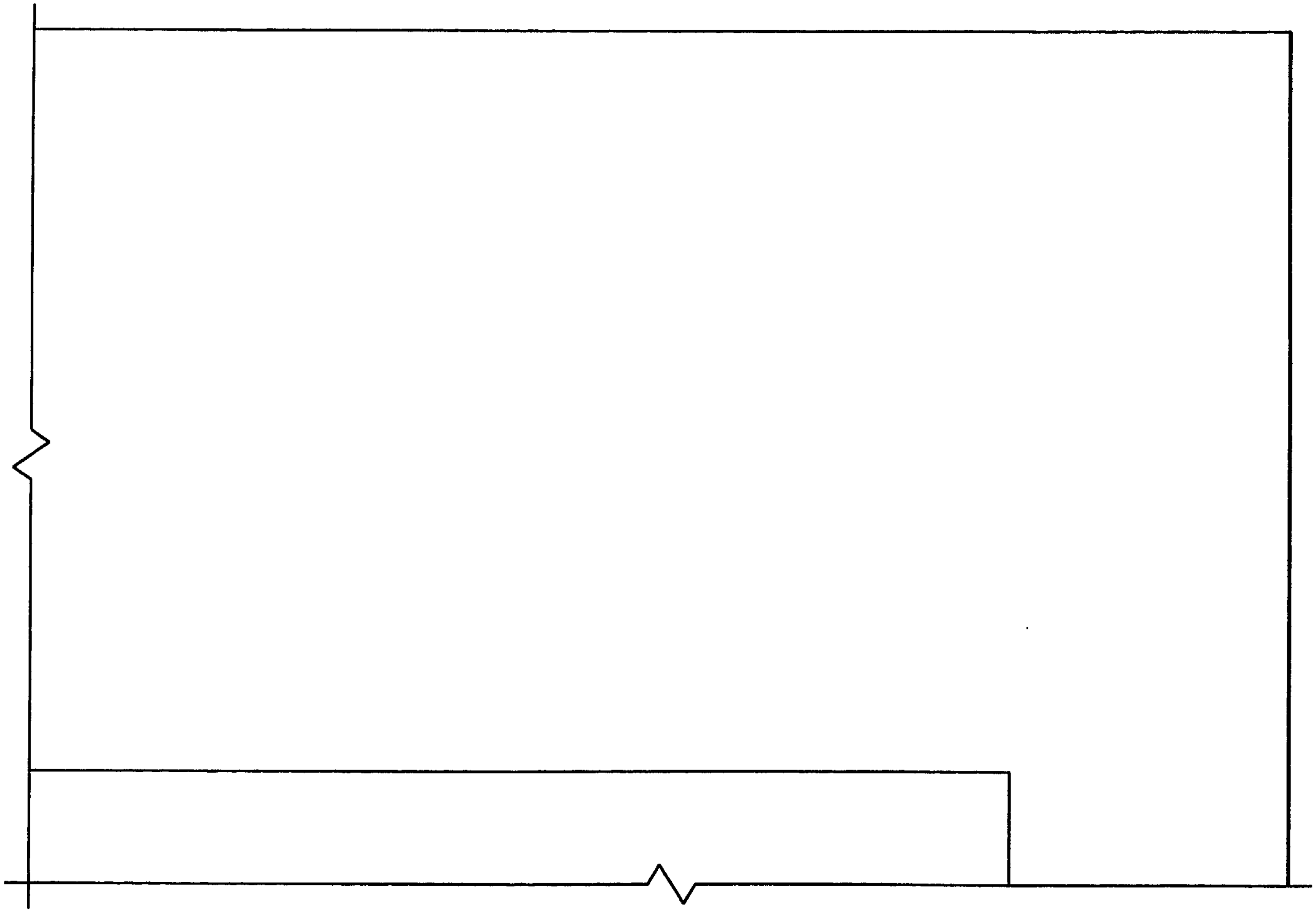


Fig 9.0901AH

09822063.061101

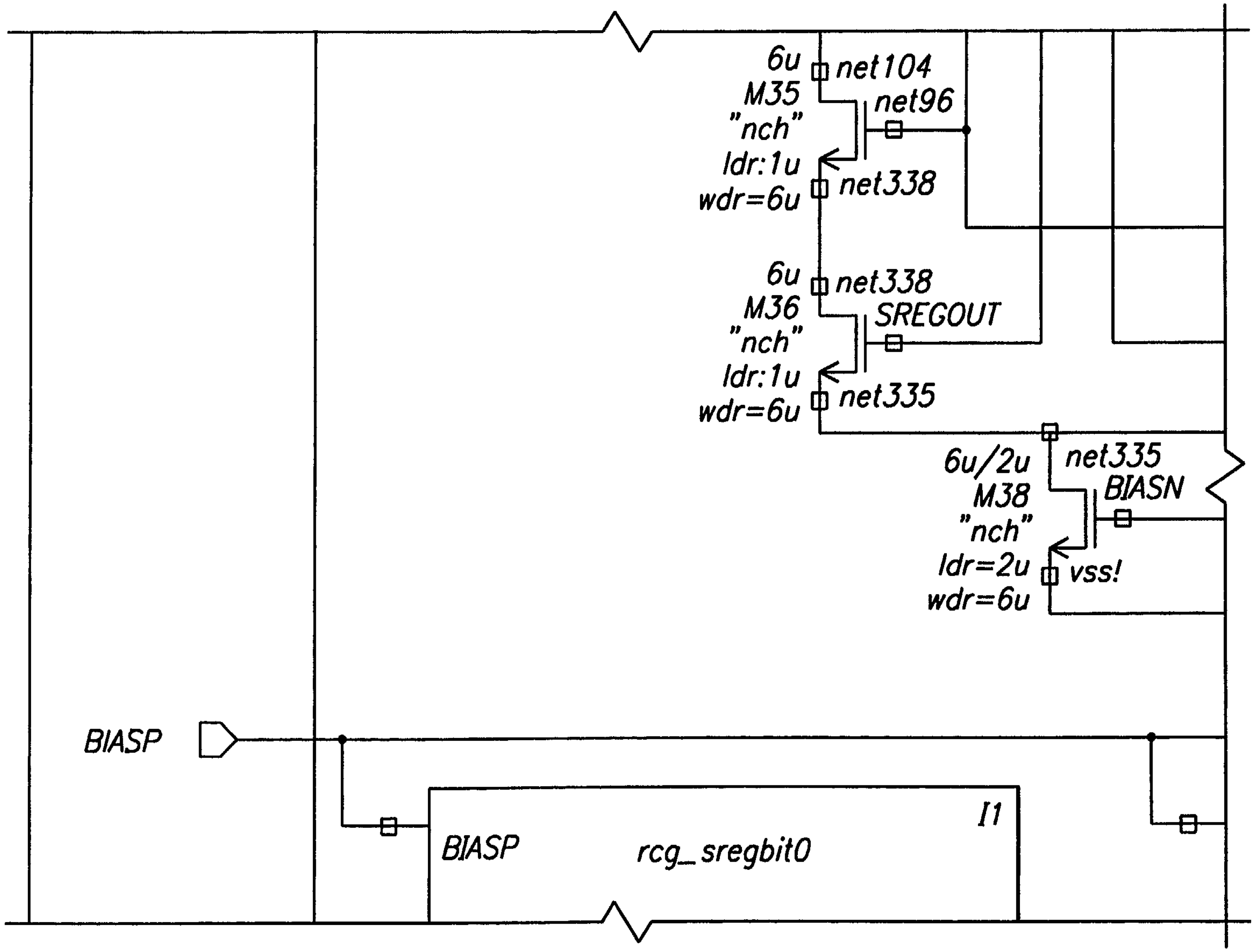


Fig 9.0901BA

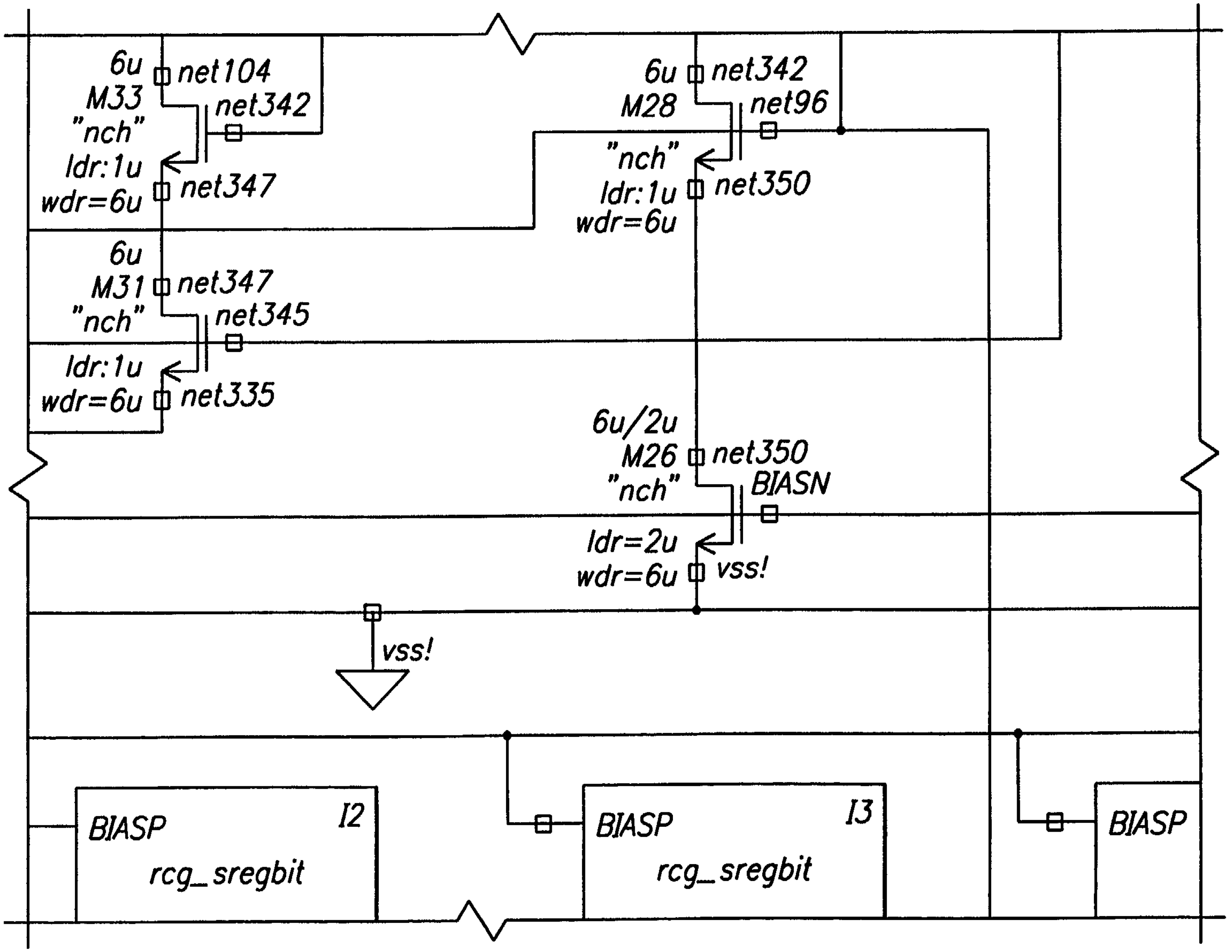

6u
M33
"nch"
ldr:1u
wdr=6u
net104
net342
net347
6u
M31
"nch"
ldr:1u
wdr=6u
net347
net345
net335
6u
M28
"nch"
ldr:1u
wdr=6u
net342
net96
net350
6u/2u
M26
"nch"
ldr=2u
wdr=6u
net350
BIASN
vss!
vss!
BIASP
I2
rcg_sregbit
BIASP
I3
rcg_sregbit
BIASP

Fig 9.0901BB

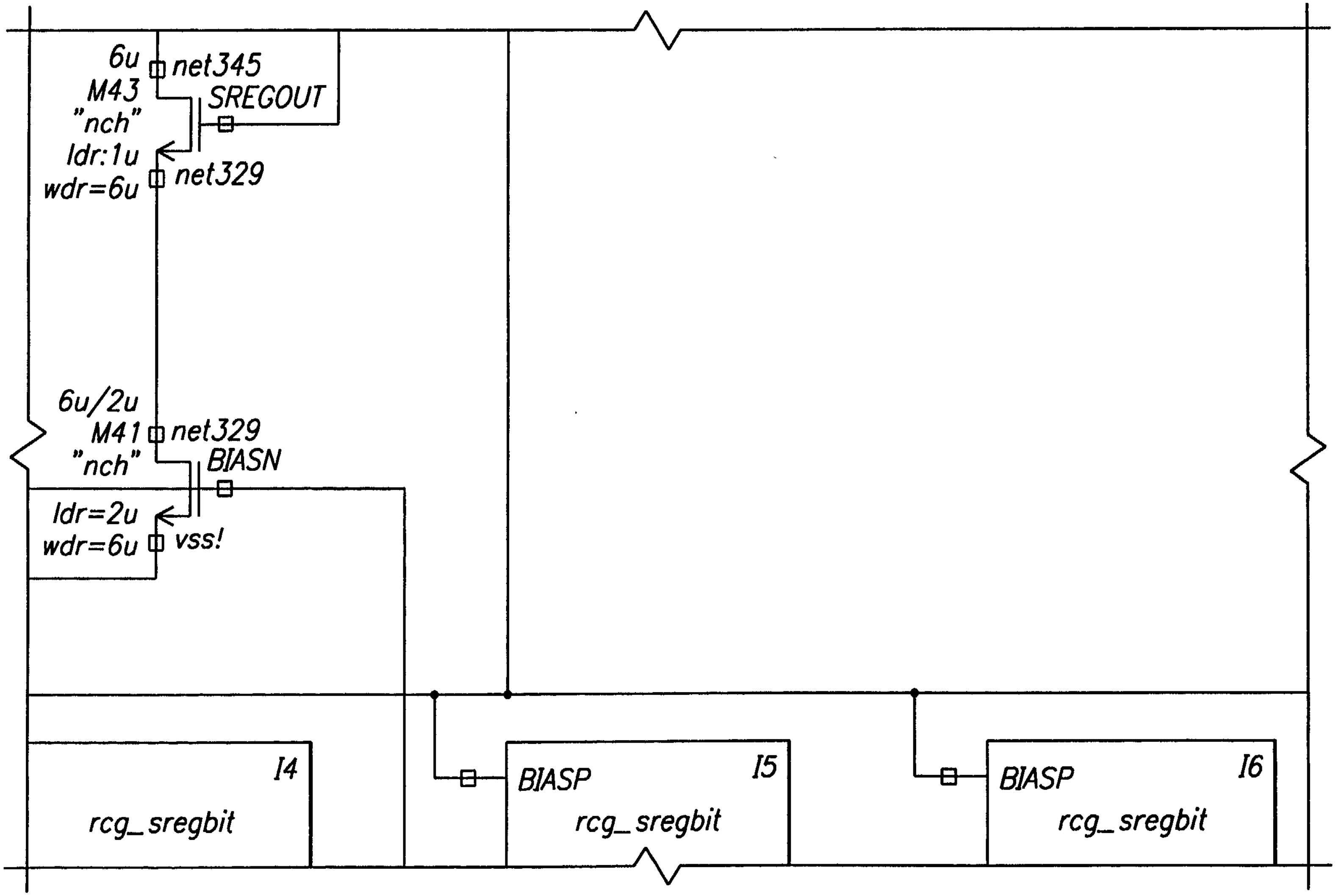

6u
M43
"nch"
ldr:1u
wdr=6u
net345
SREGOUT
net329
6u/2u
M41
"nch"
ldr=2u
wdr=6u
net329
BIASN
vss!
I4
rcg_sregbit
BIASP
I5
rcg_sregbit
BIASP
I6
rcg_sregbit

Fig 9.0901BC

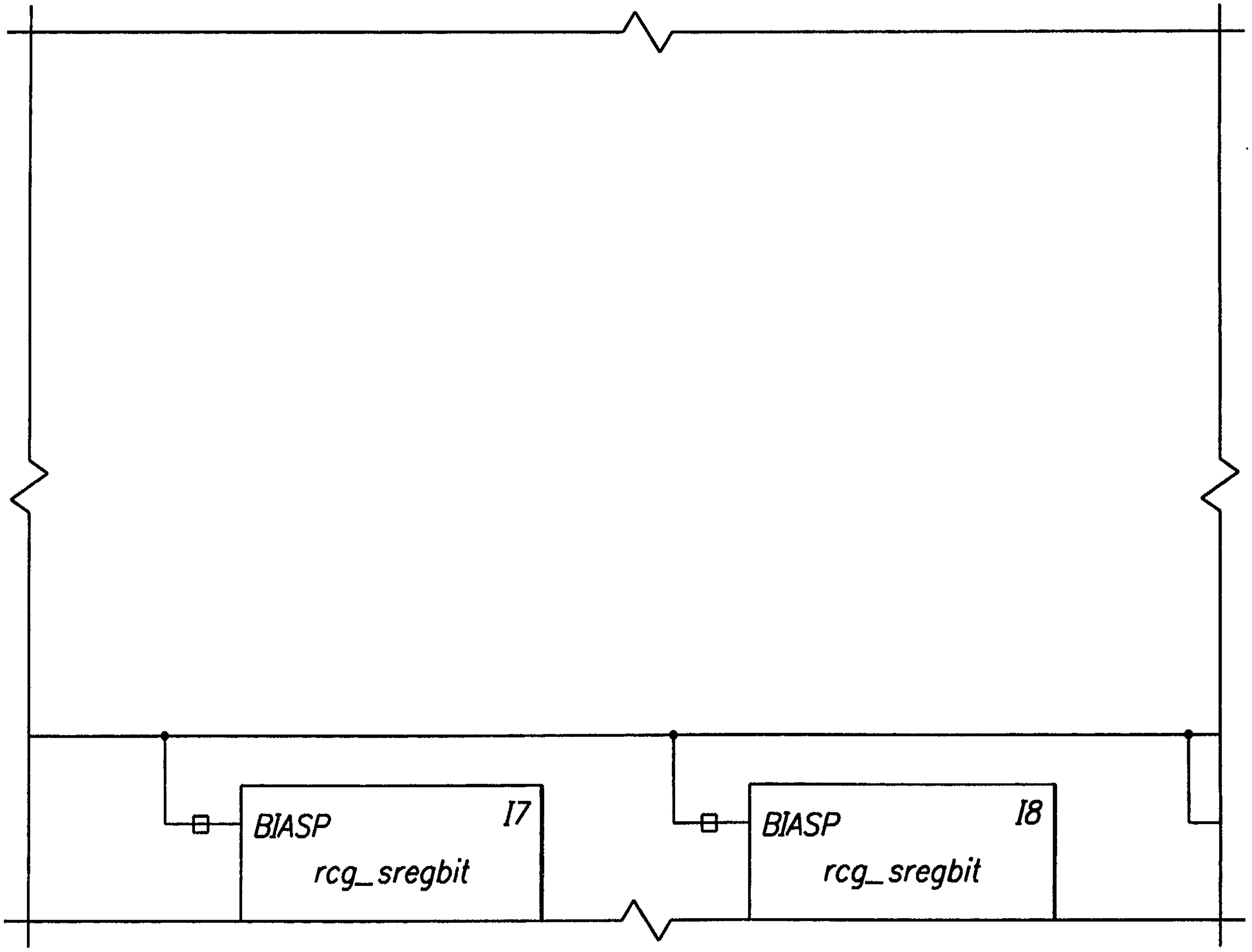


Fig. 9.0901BD

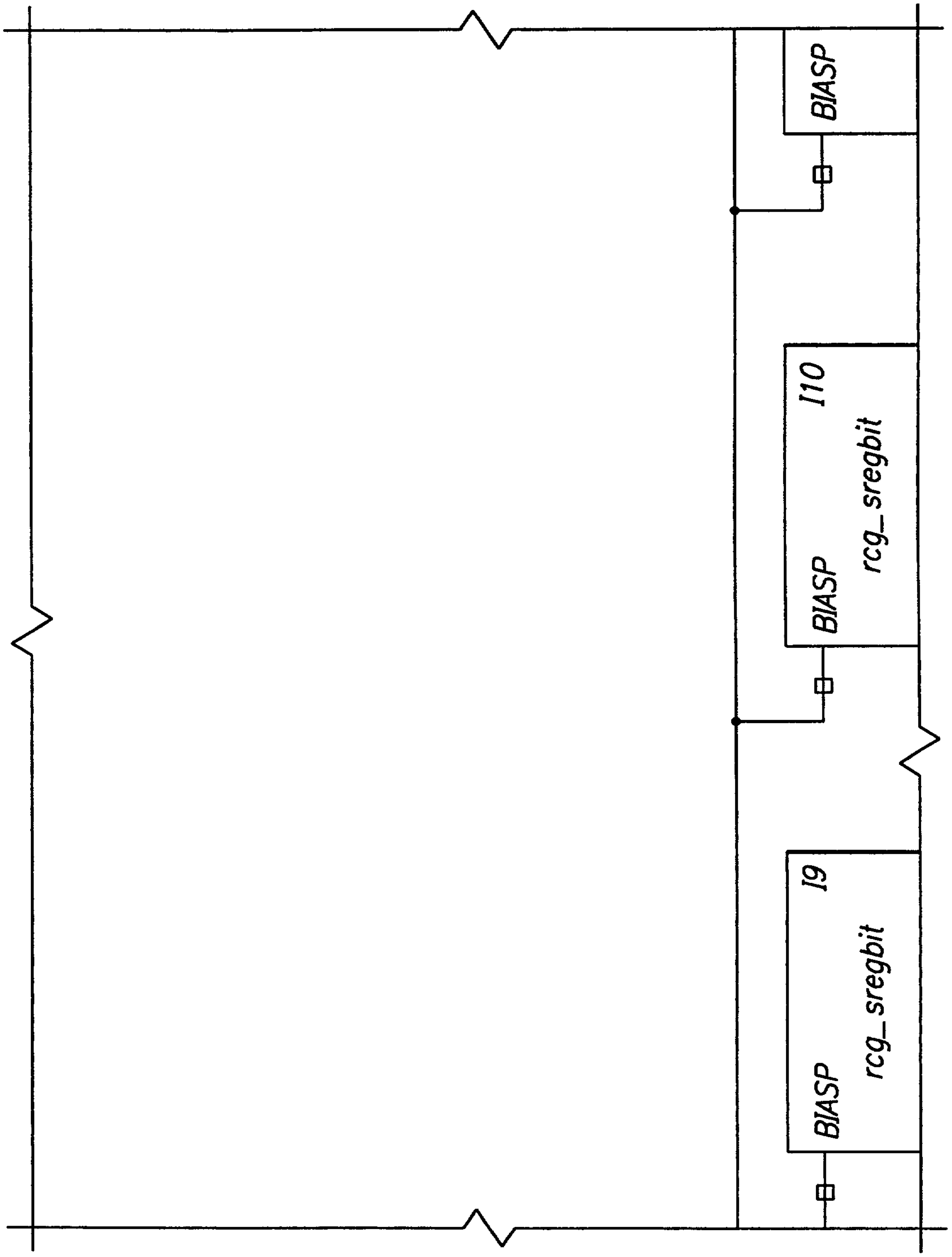


FIG. 9.0901BE

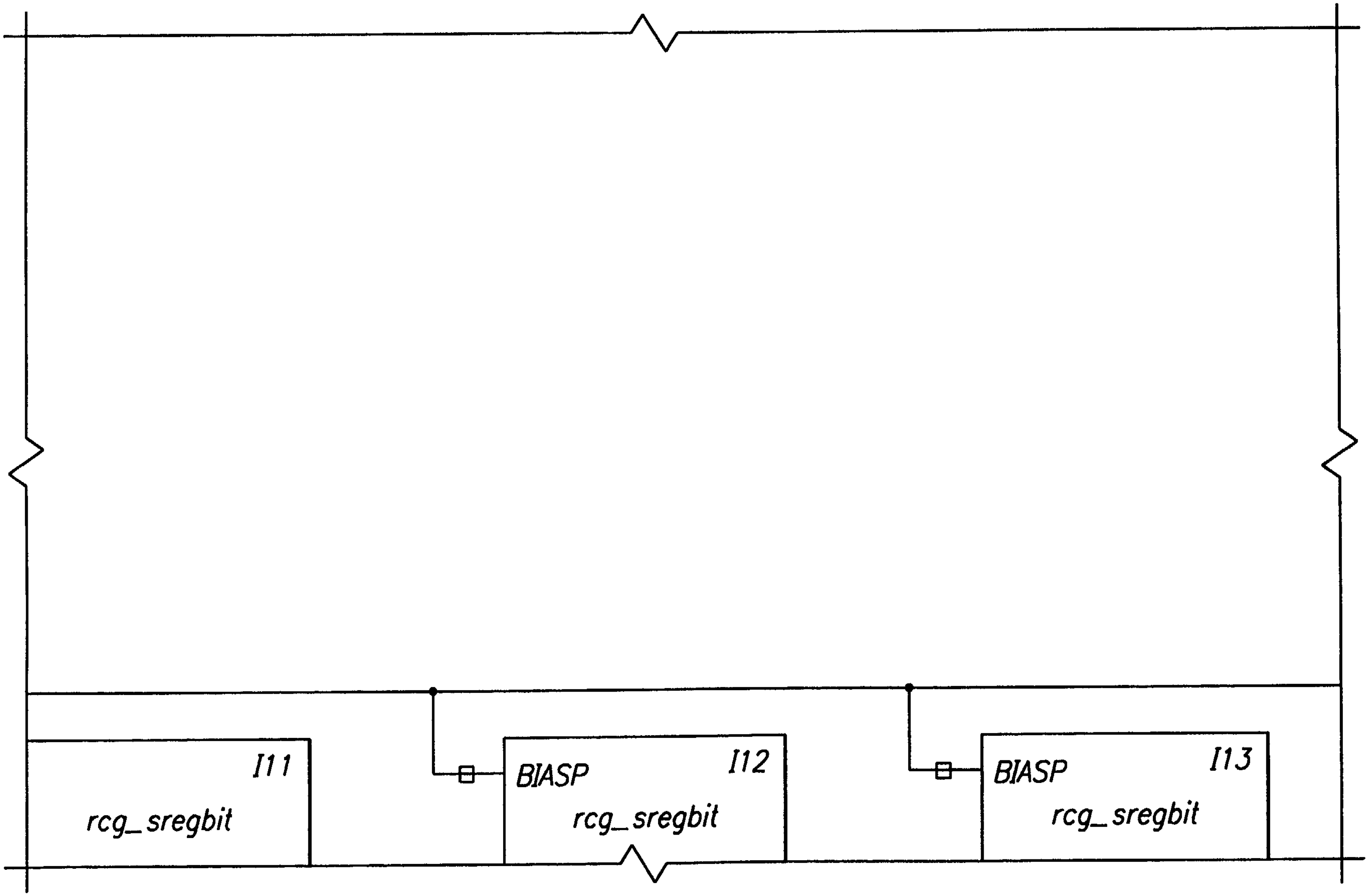


Fig. 9.0901BF

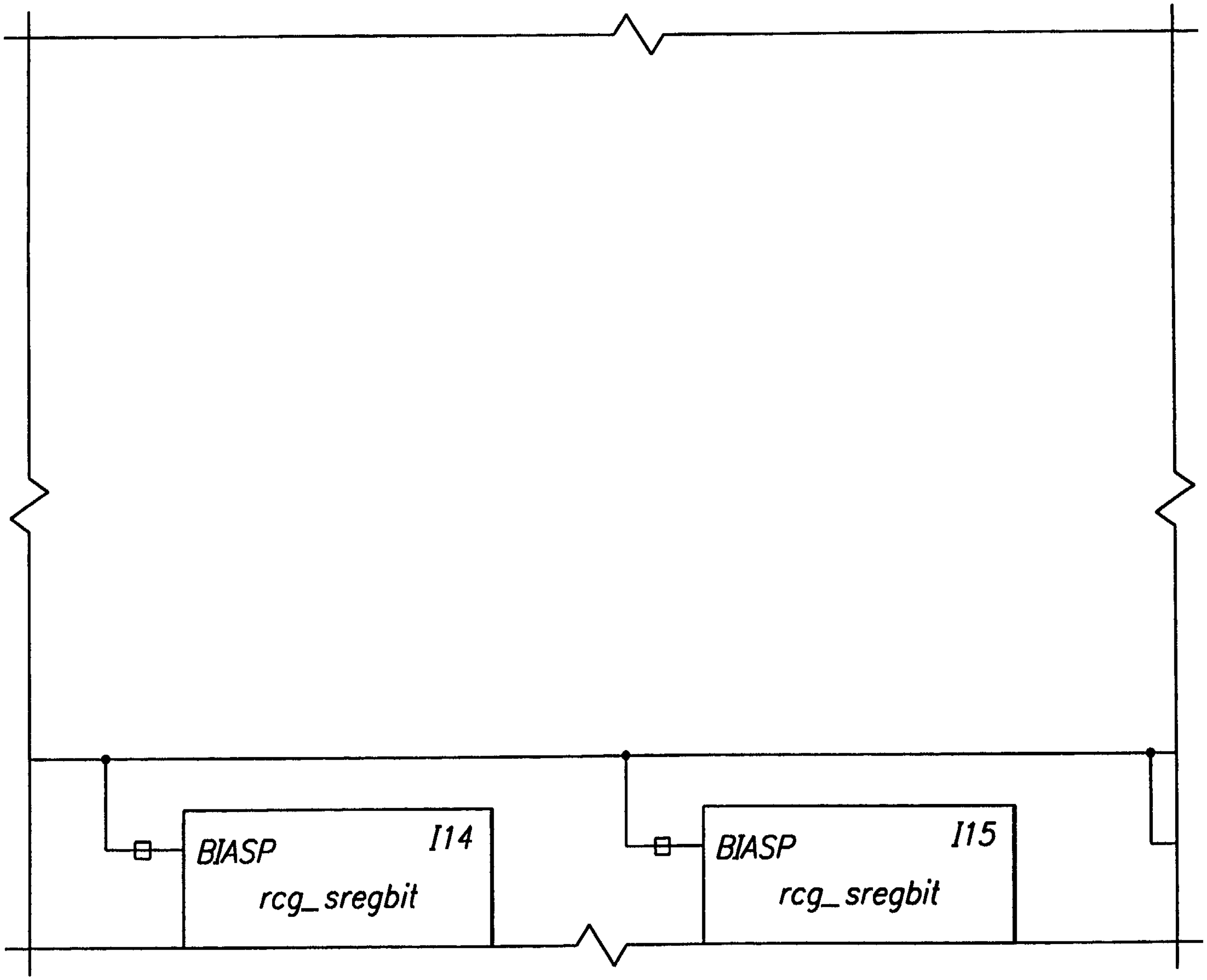


FIG 9.0901BG

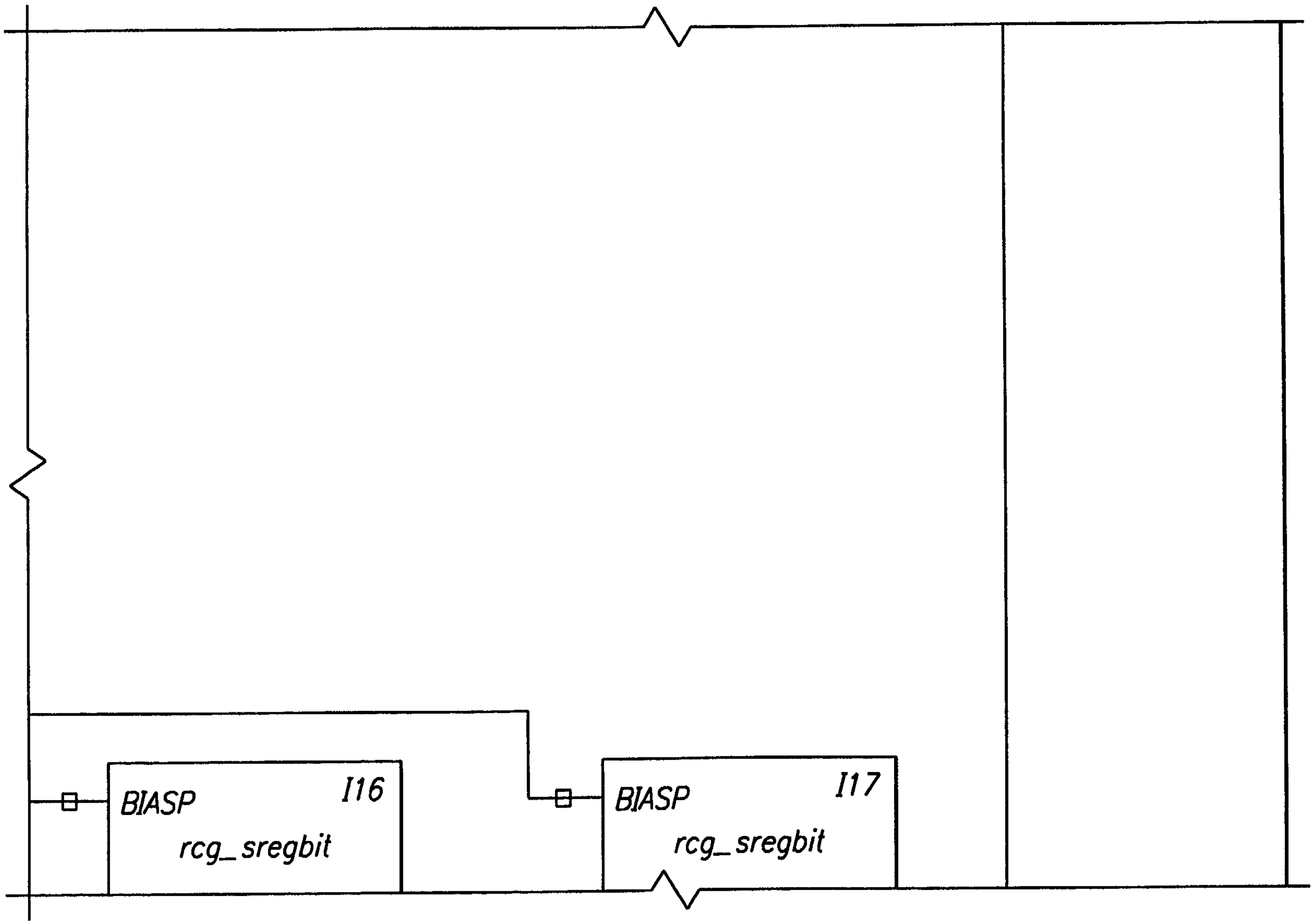


Fig 9.0901BH

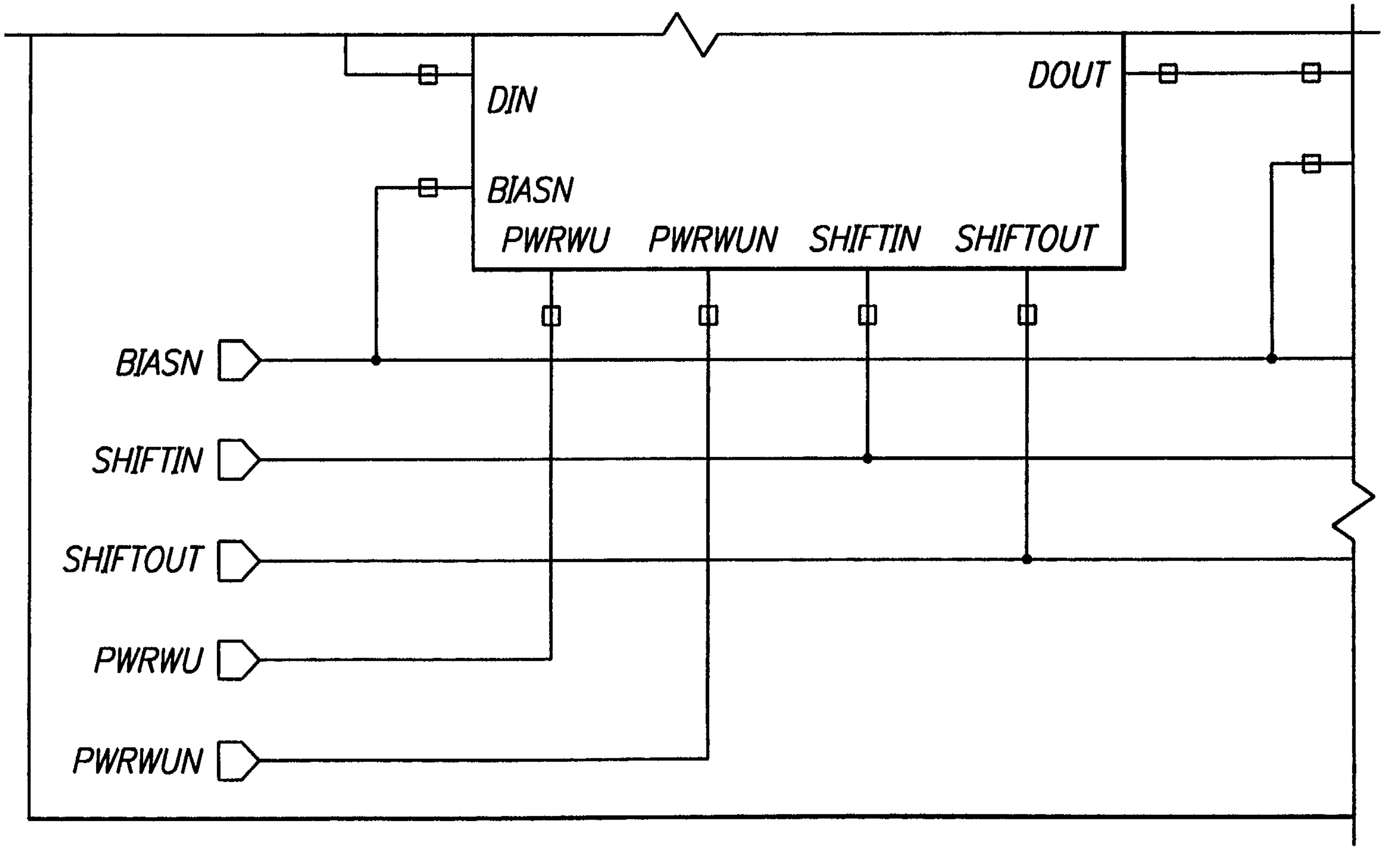

DIN
BIASN
PWRWU
PWRWUN
SHIFTIN
SHIFTOUT
DOUT
BIASN
SHIFTIN
SHIFTOUT
PWRWU
PWRWUN

Fig 9.0901CA

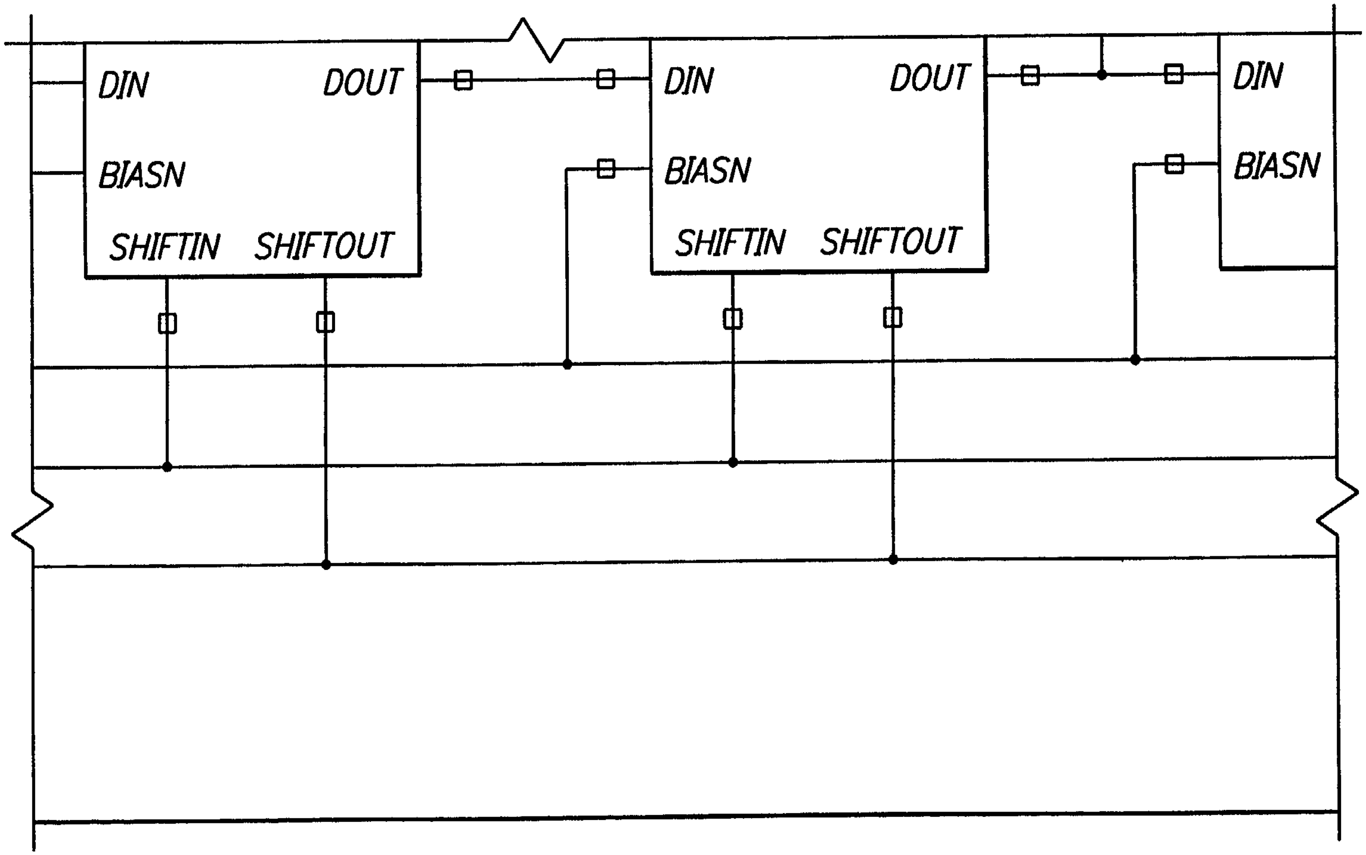

DIN
BIASN
SHIFTIN
SHIFTOUT
DOUT
DIN
BIASN
SHIFTIN
SHIFTOUT
DOUT
DIN
BIASN

Fig 9.0901CB

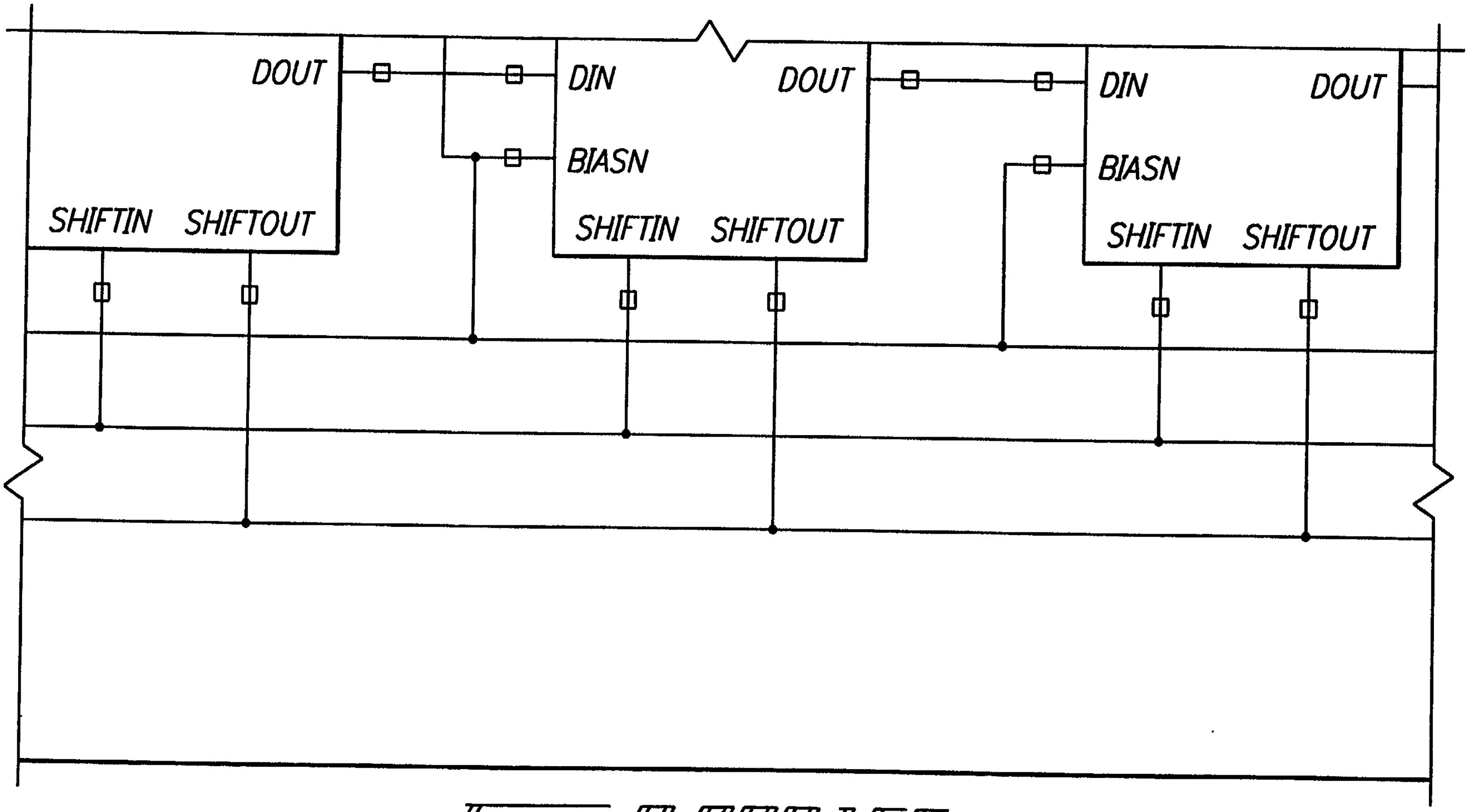

DOUT
SHIFTIN
SHIFTOUT
DIN
DOUT
BIASN
SHIFTIN
SHIFTOUT
DIN
DOUT
BIASN
SHIFTIN
SHIFTOUT

Fig 9.090ICC

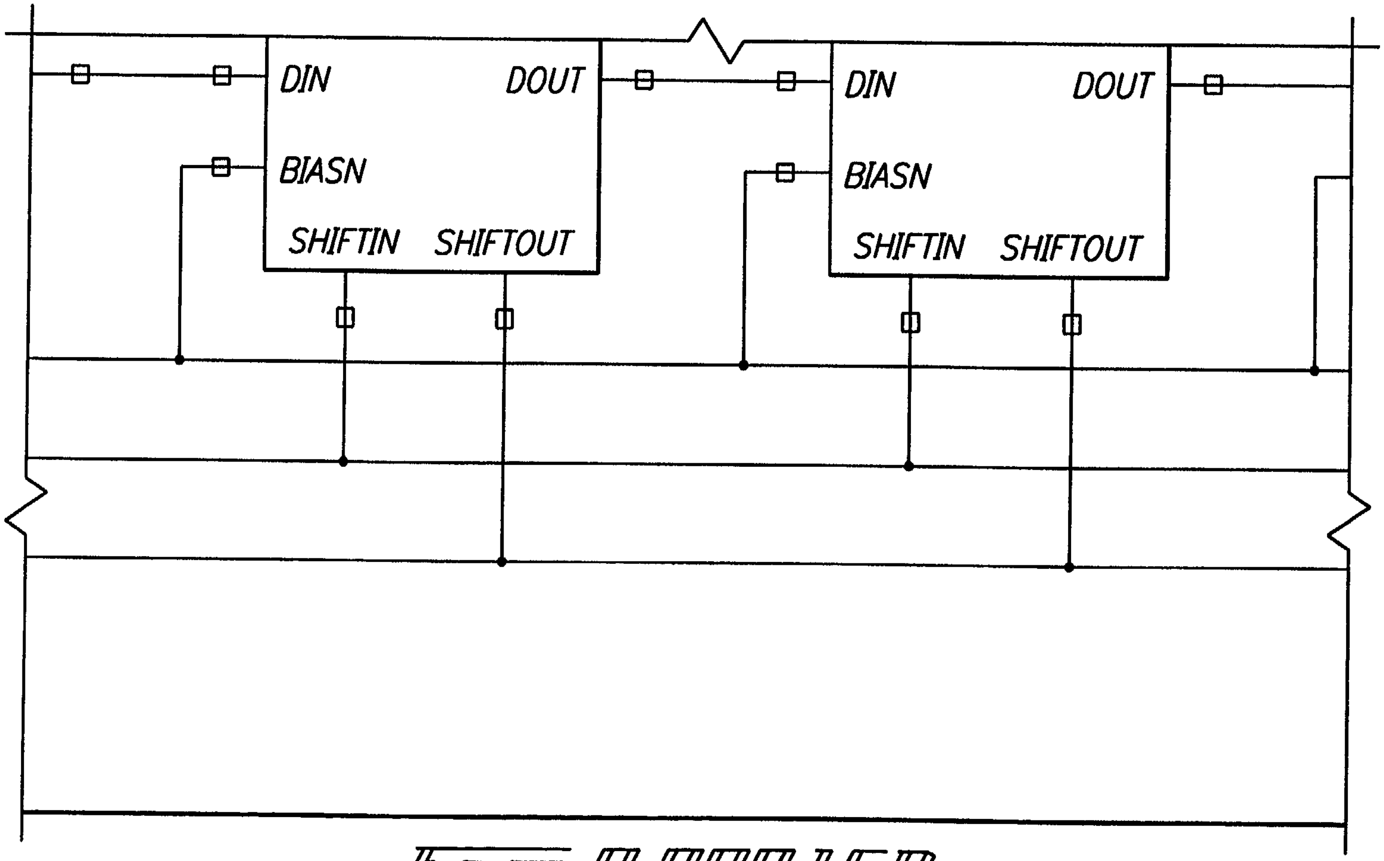

DIN
DOUT
BIASN
SHIFTIN
SHIFTOUT
DIN
DOUT
BIASN
SHIFTIN
SHIFTOUT

Fig 9.0901CD

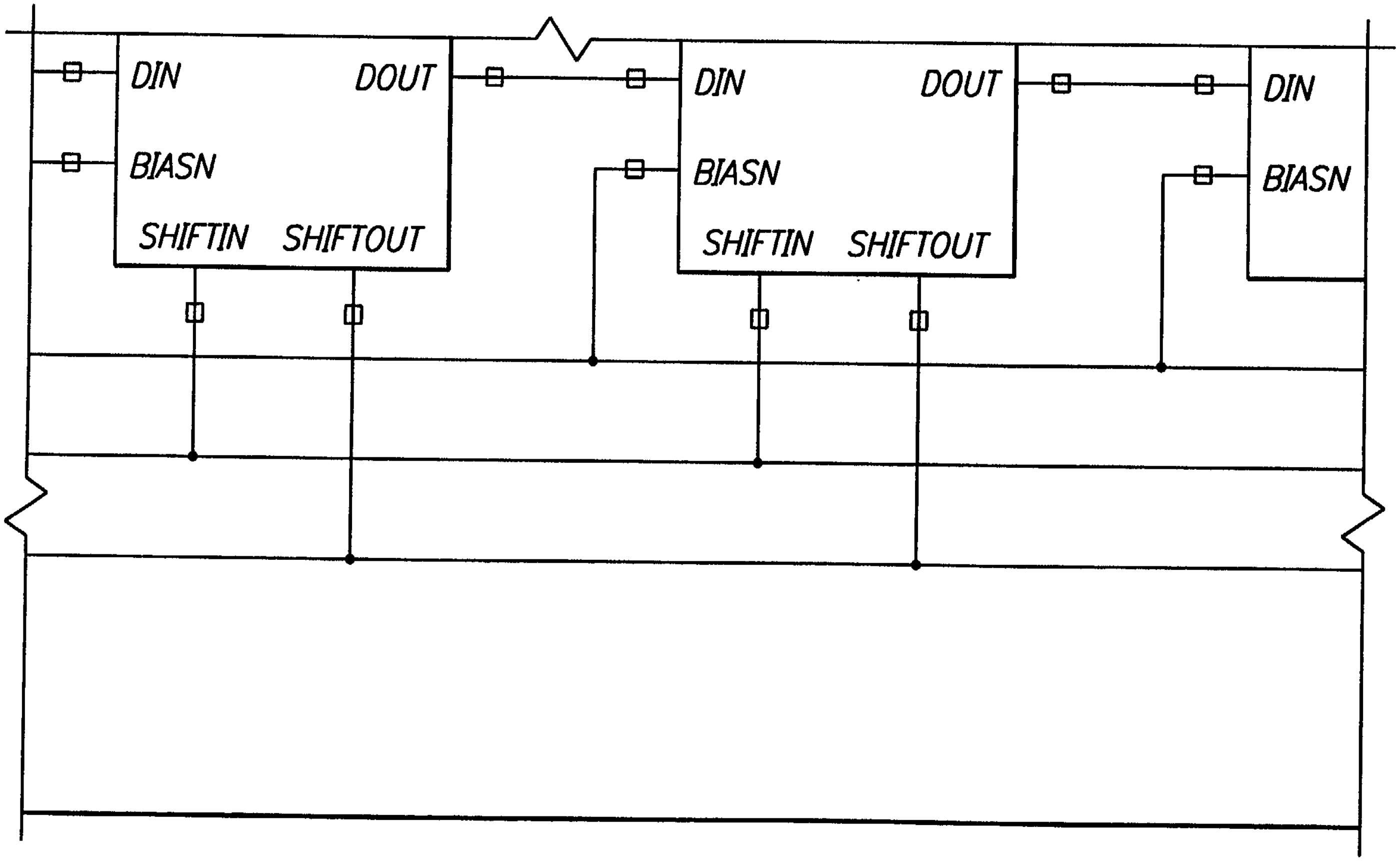

DIN
DOUT
BIASN
SHIFTIN
SHIFTOUT
DIN
DOUT
BIASN
SHIFTIN
SHIFTOUT
DIN
BIASN

Fig 9.0901CE

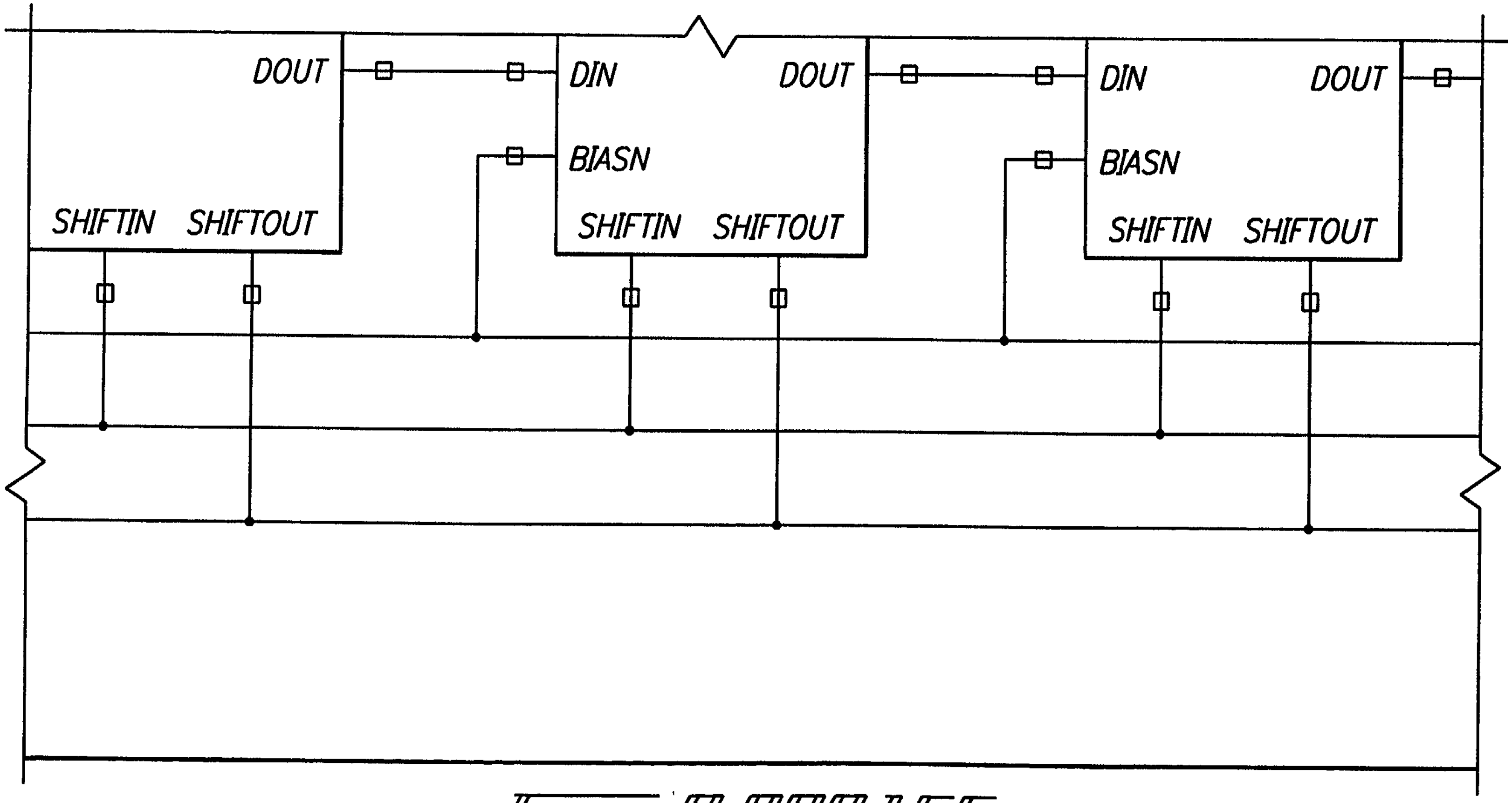

DOUT
SHIFTIN
SHIFTOUT
DIN
DOUT
BIASN
SHIFTIN
SHIFTOUT
DIN
DOUT
BIASN
SHIFTIN
SHIFTOUT

Fig 9.0901CF

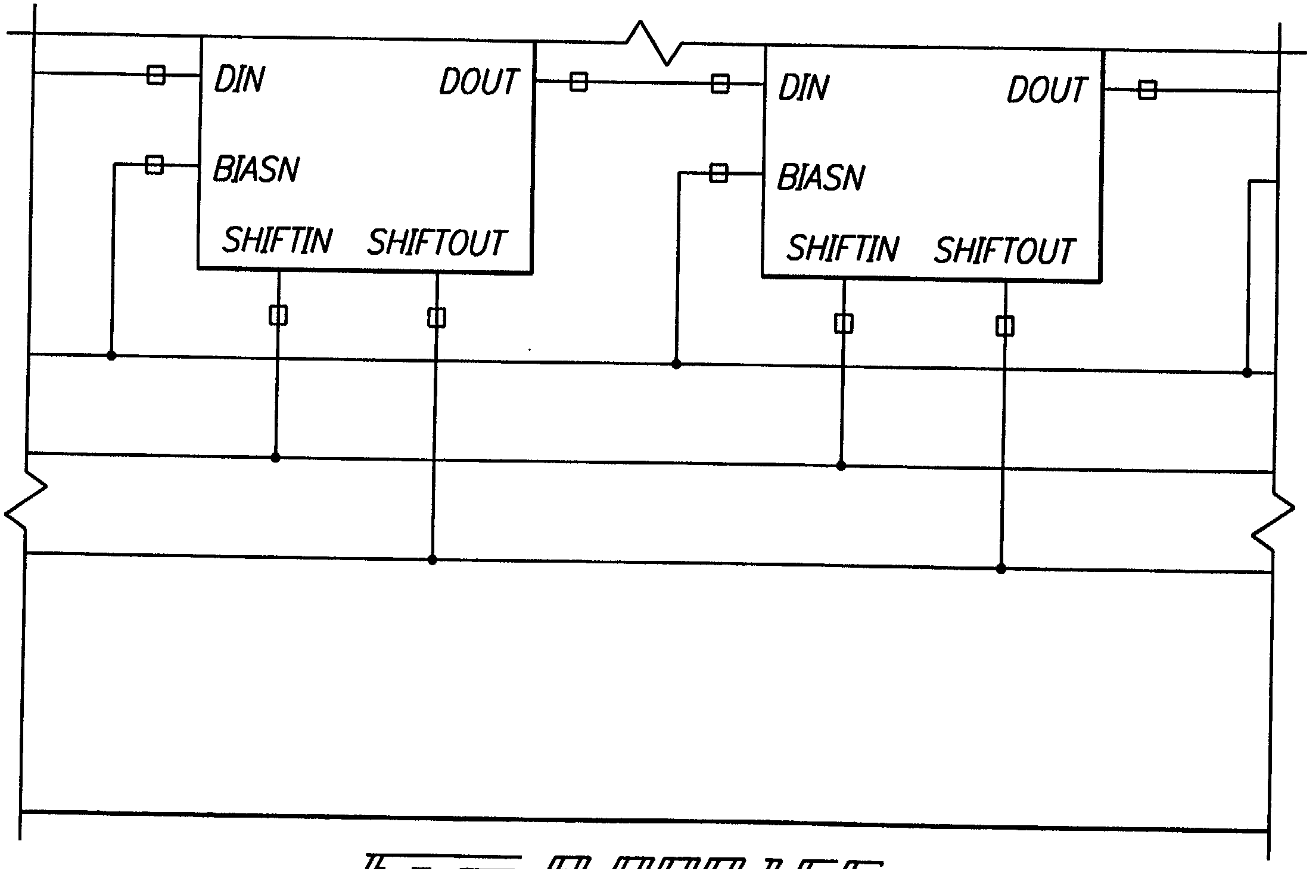

DIN
DOUT
BIASN
SHIFTIN
SHIFTOUT
DIN
DOUT
BIASN
SHIFTIN
SHIFTOUT

Fig 9.0901CG

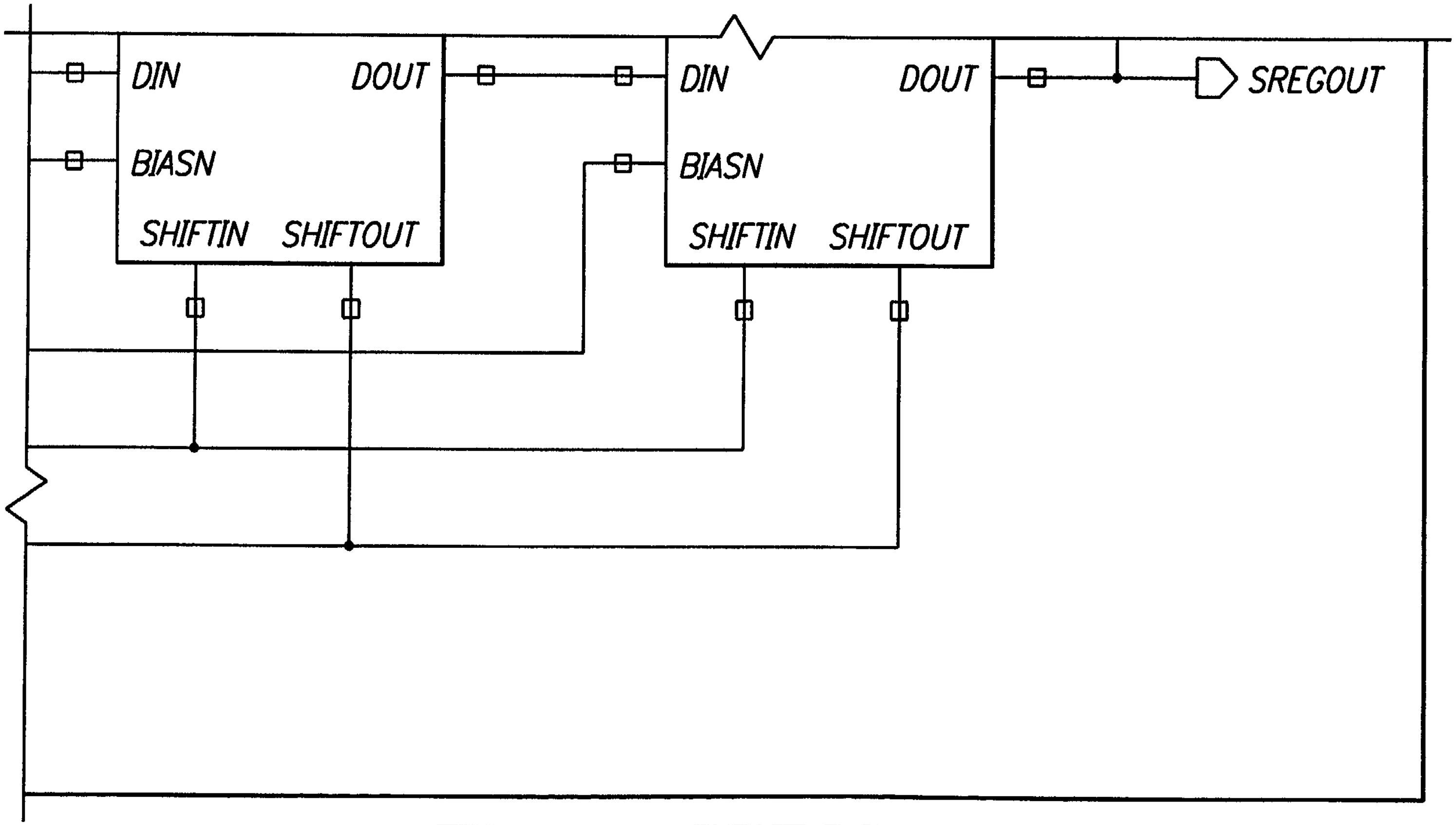

DIN
DOUT
BIASN
SHIFTIN
SHIFTOUT
DIN
DOUT
BIASN
SHIFTIN
SHIFTOUT
SREGOUT

FIG 9.0901CH

9.090101AA	9.090101AB	9.090101AC
9.090101BA	9.090101BB	9.090101BC
9.090101CA	9.090101CB	9.090101CC

Fig 9.090101

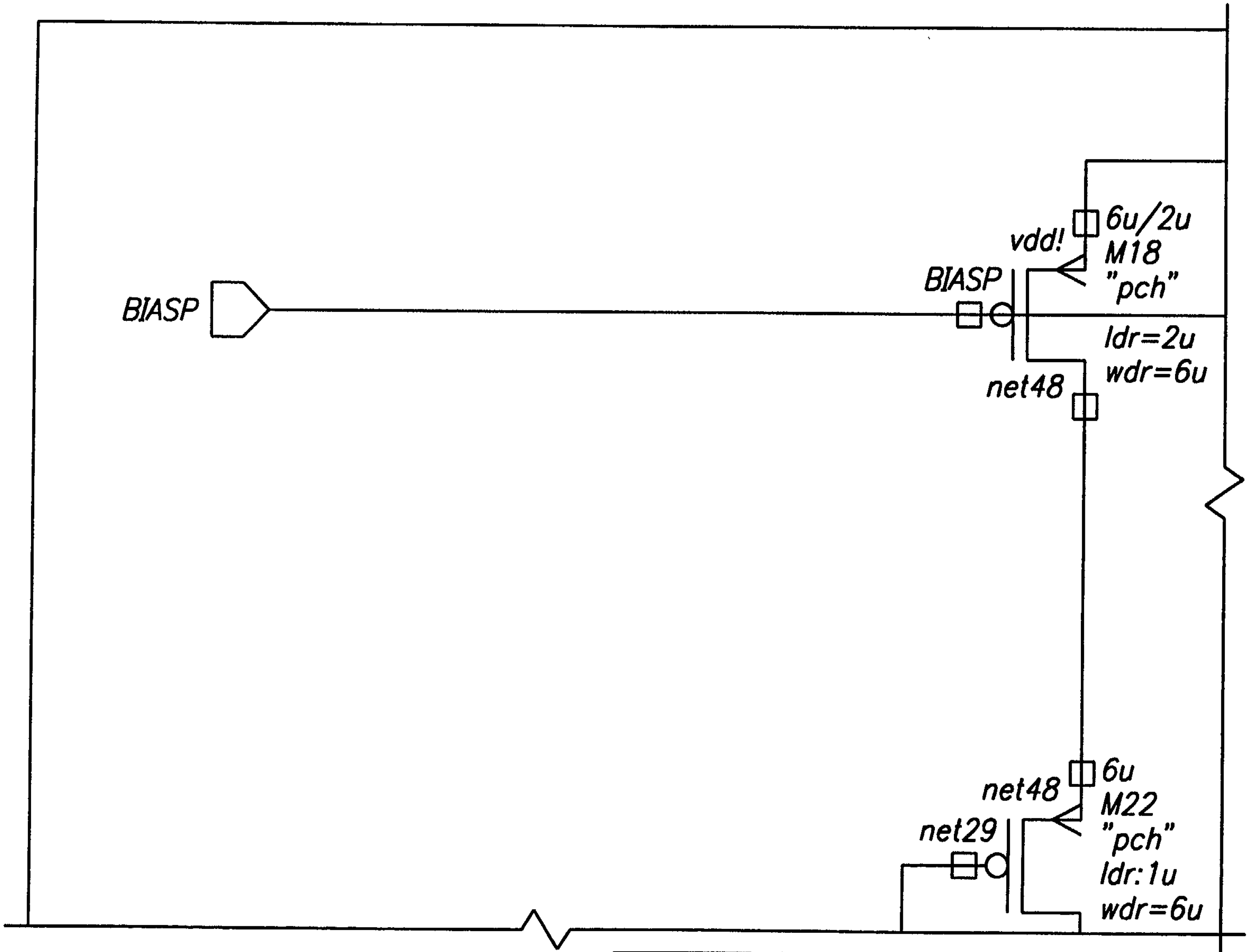


FIG 9.090101AA

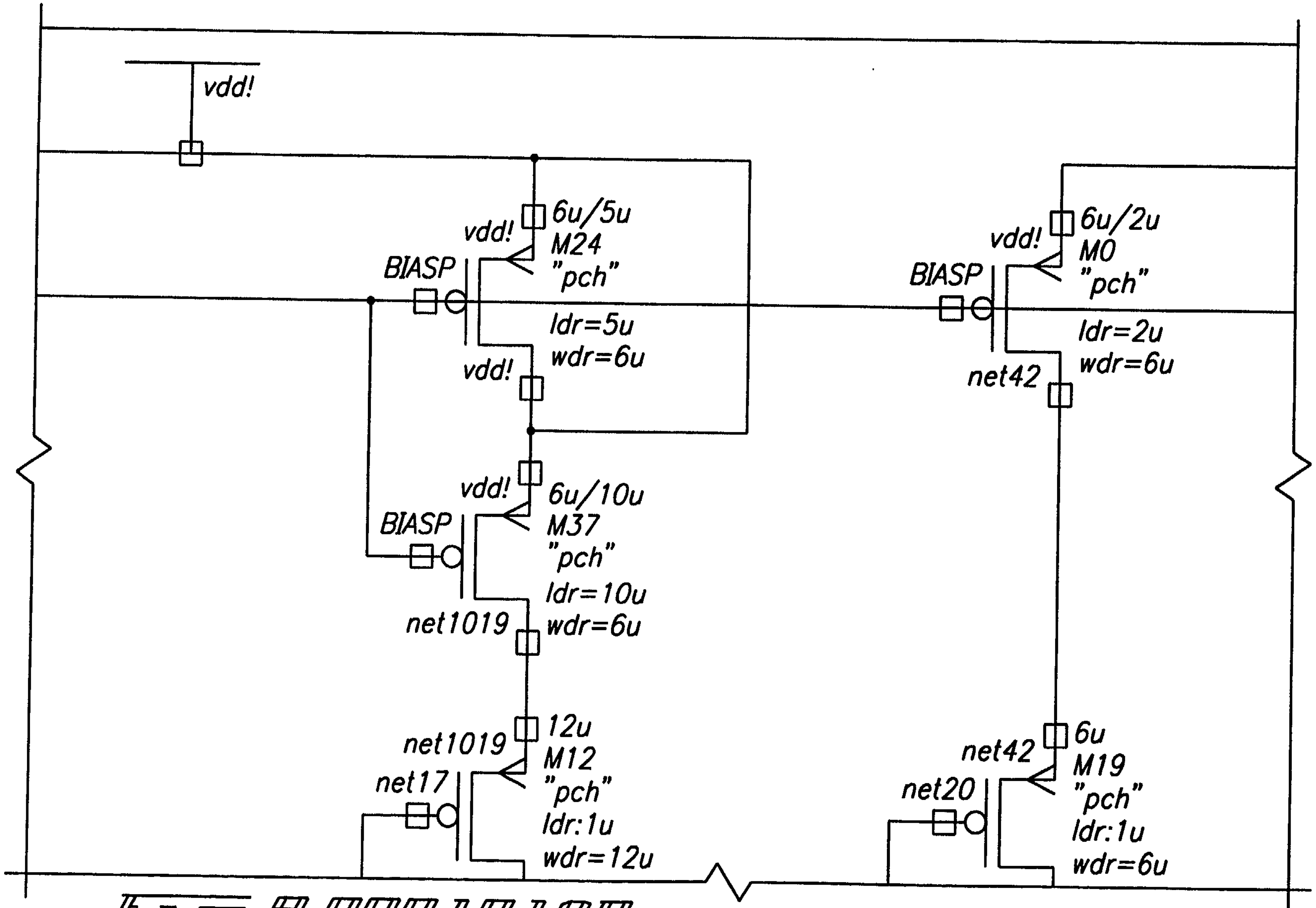


FIG 9.090101AB

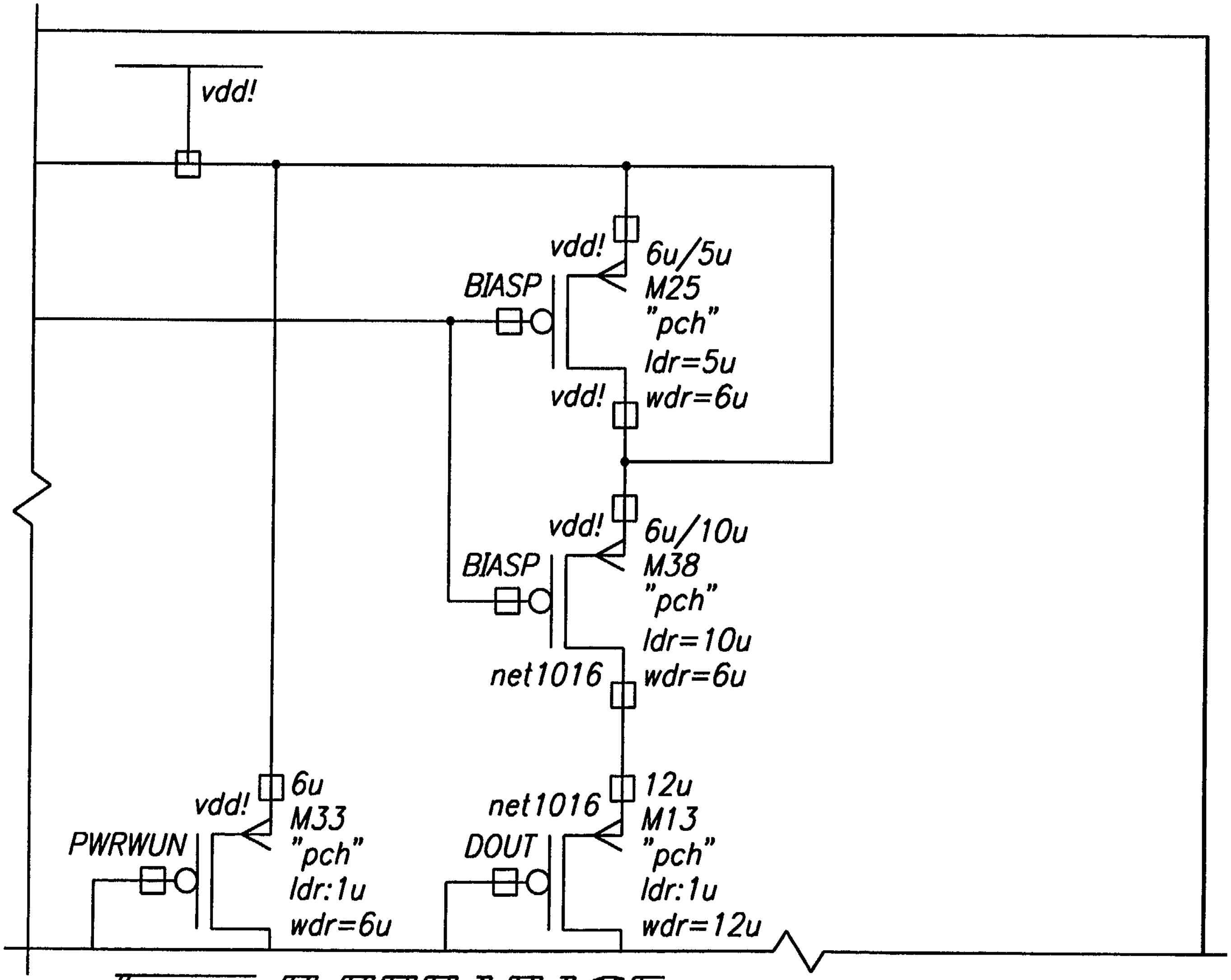


Fig 9.090101AC

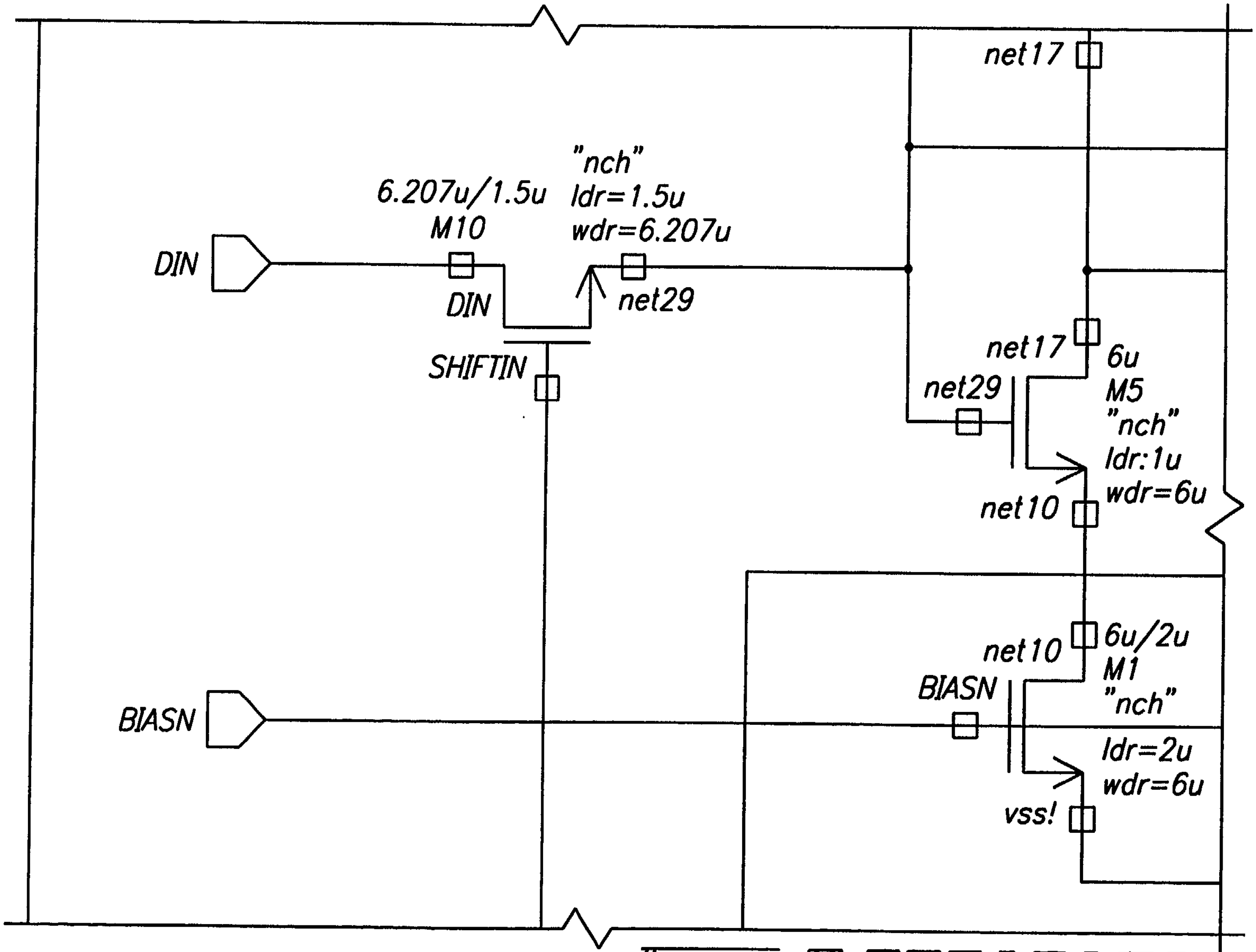


Fig 9.090101BA

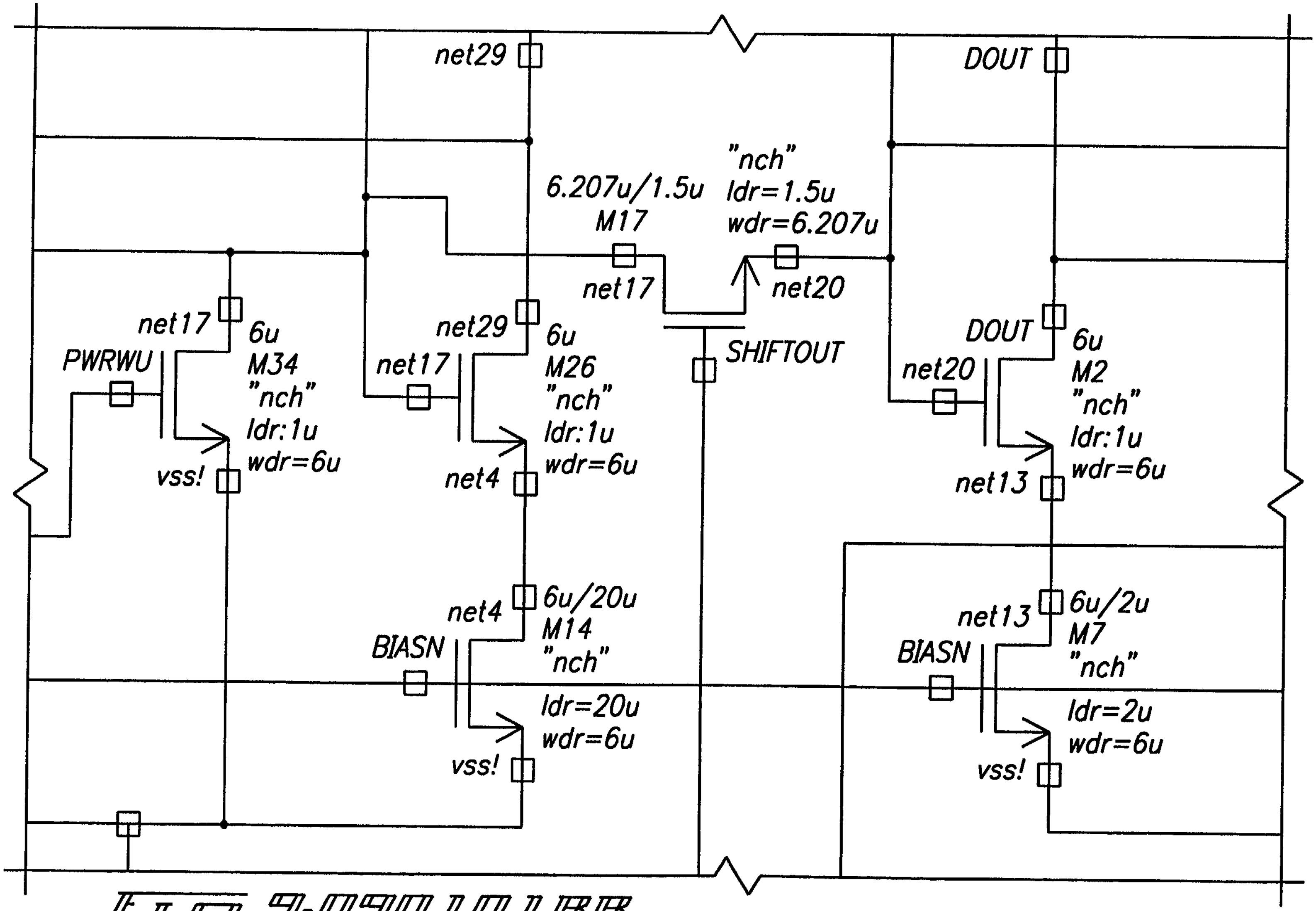


Fig 9.090101BB

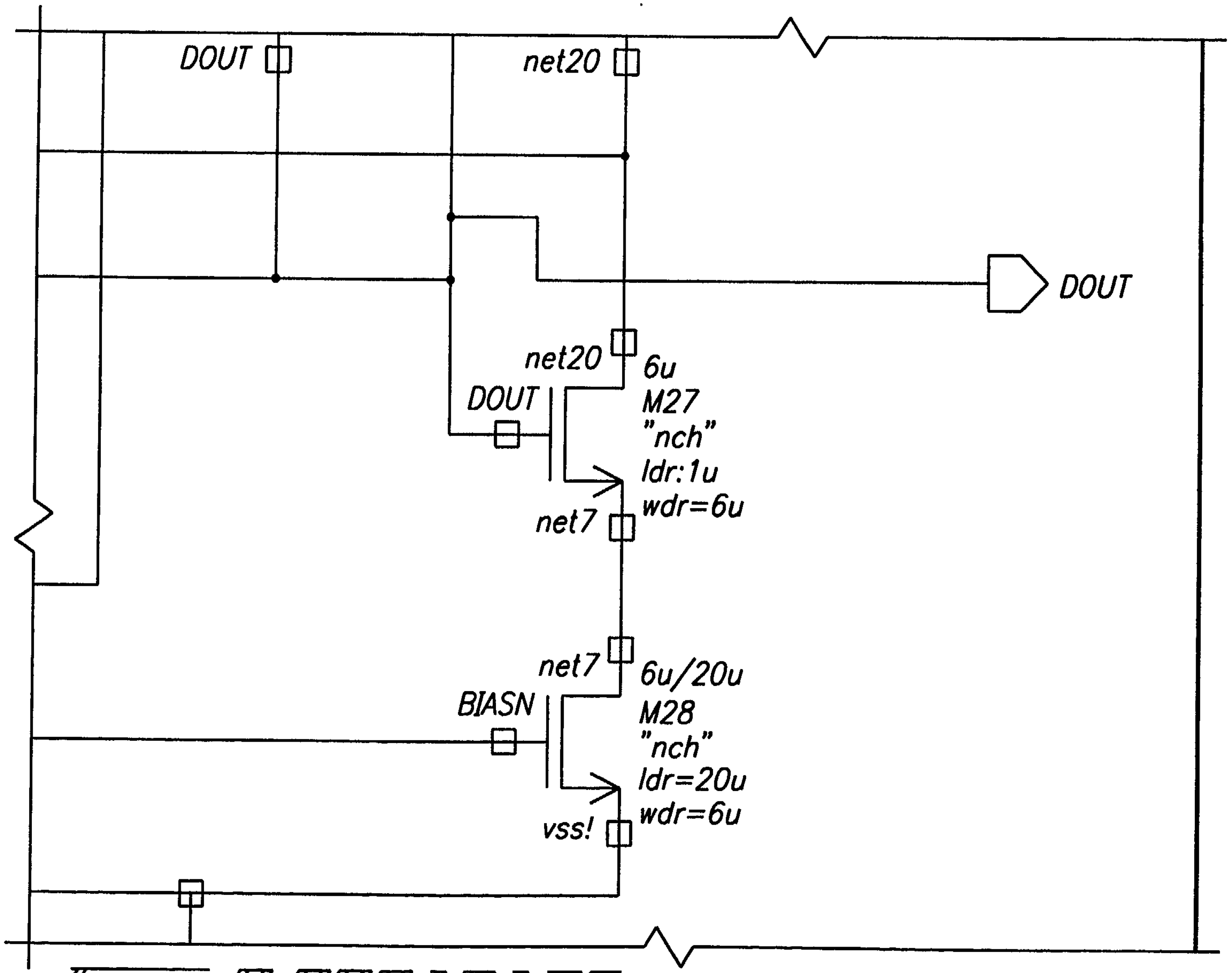


FIG 9.090101BC

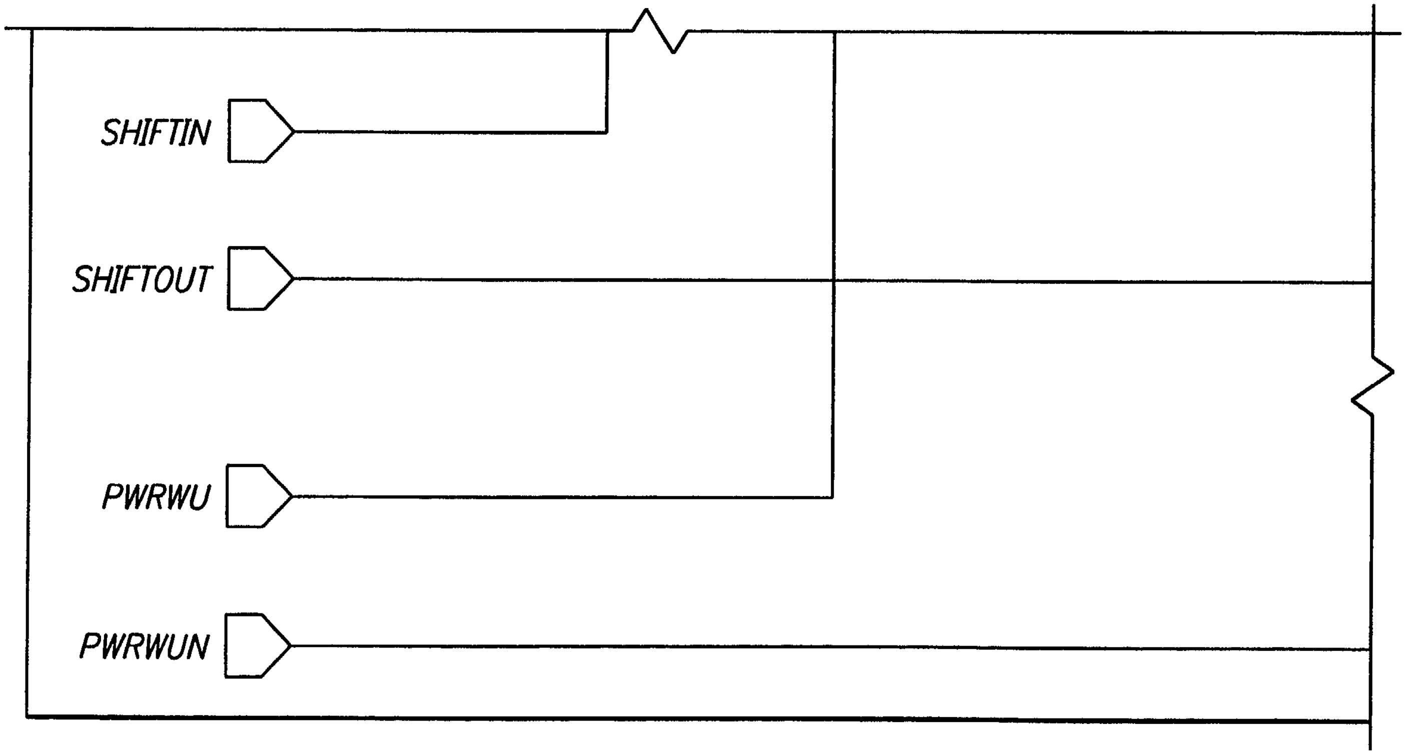


Fig 9.090101CA

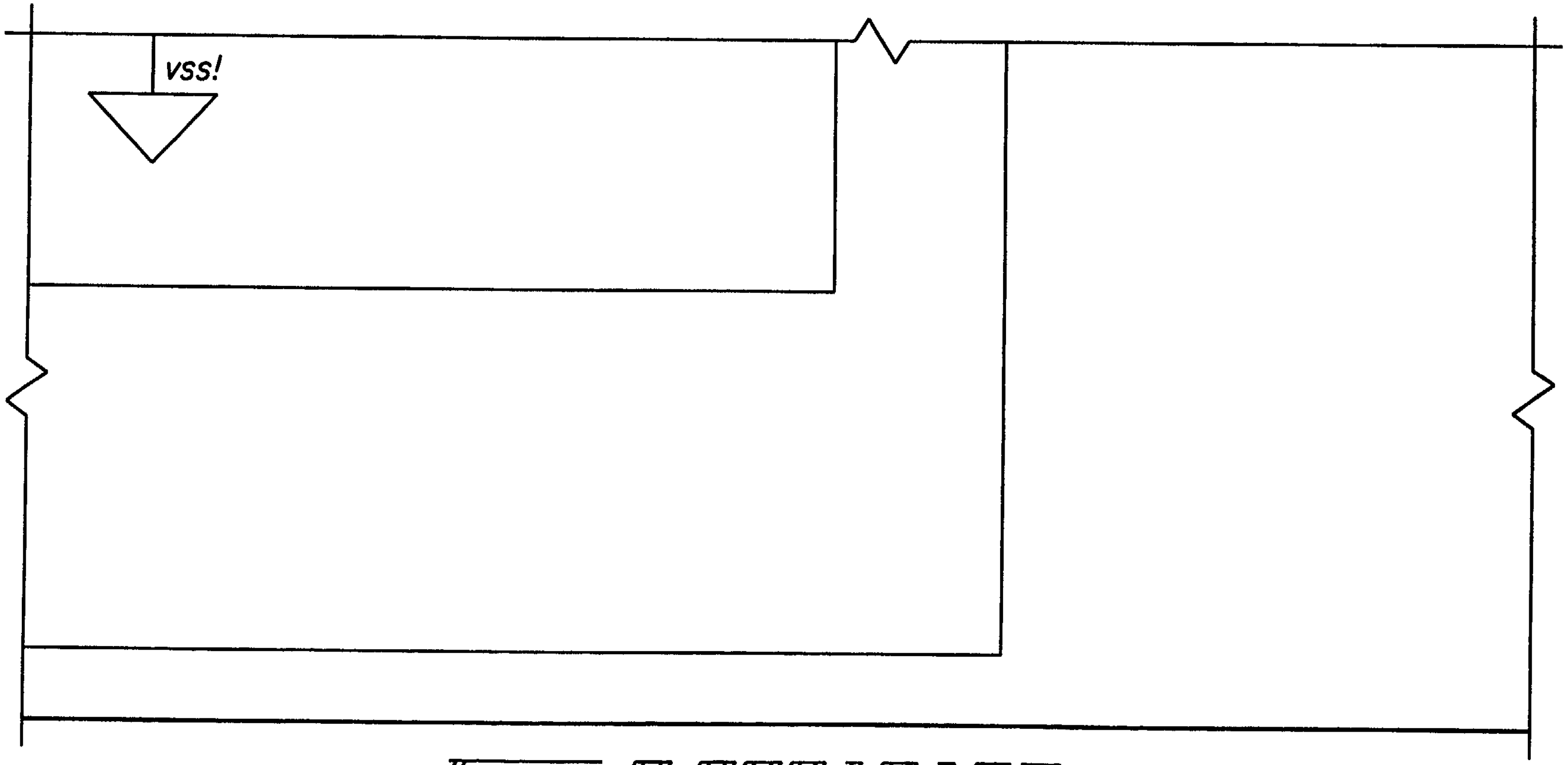


Fig 9.090101CB

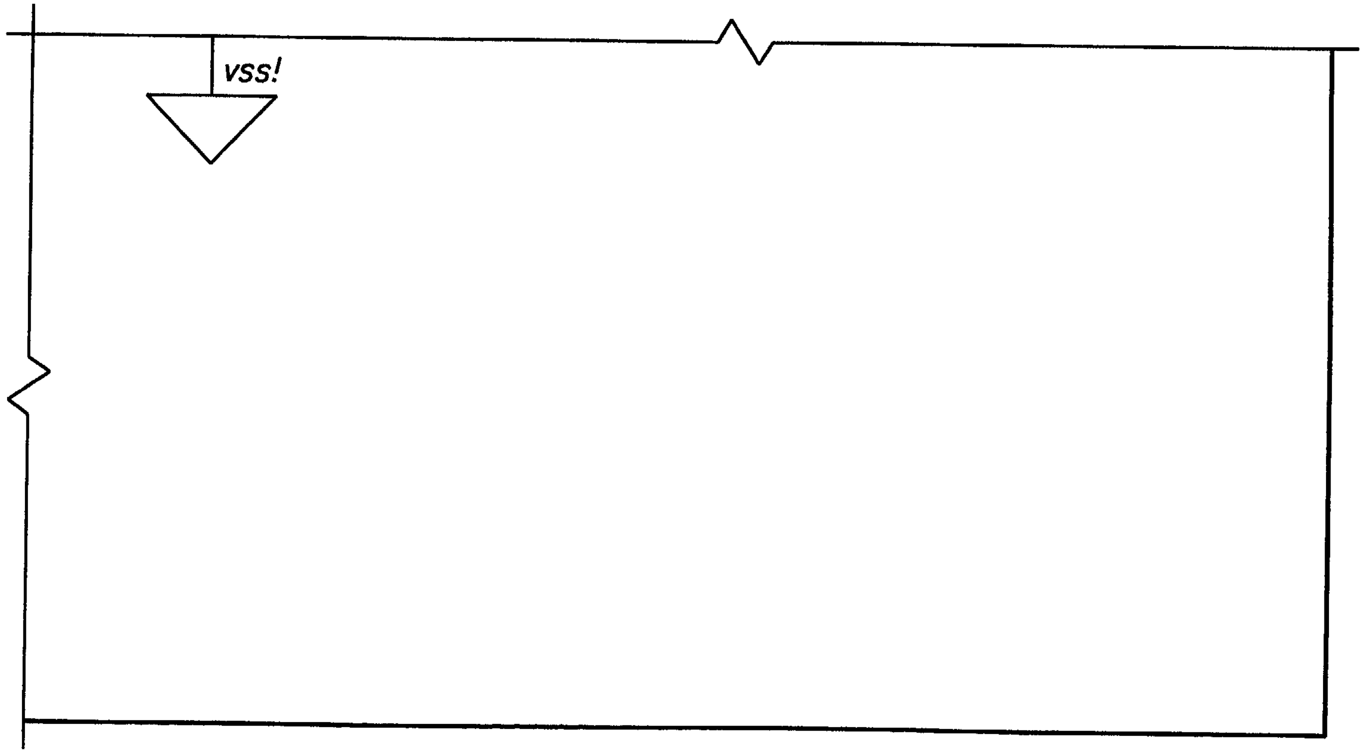


Fig 9.090101CC

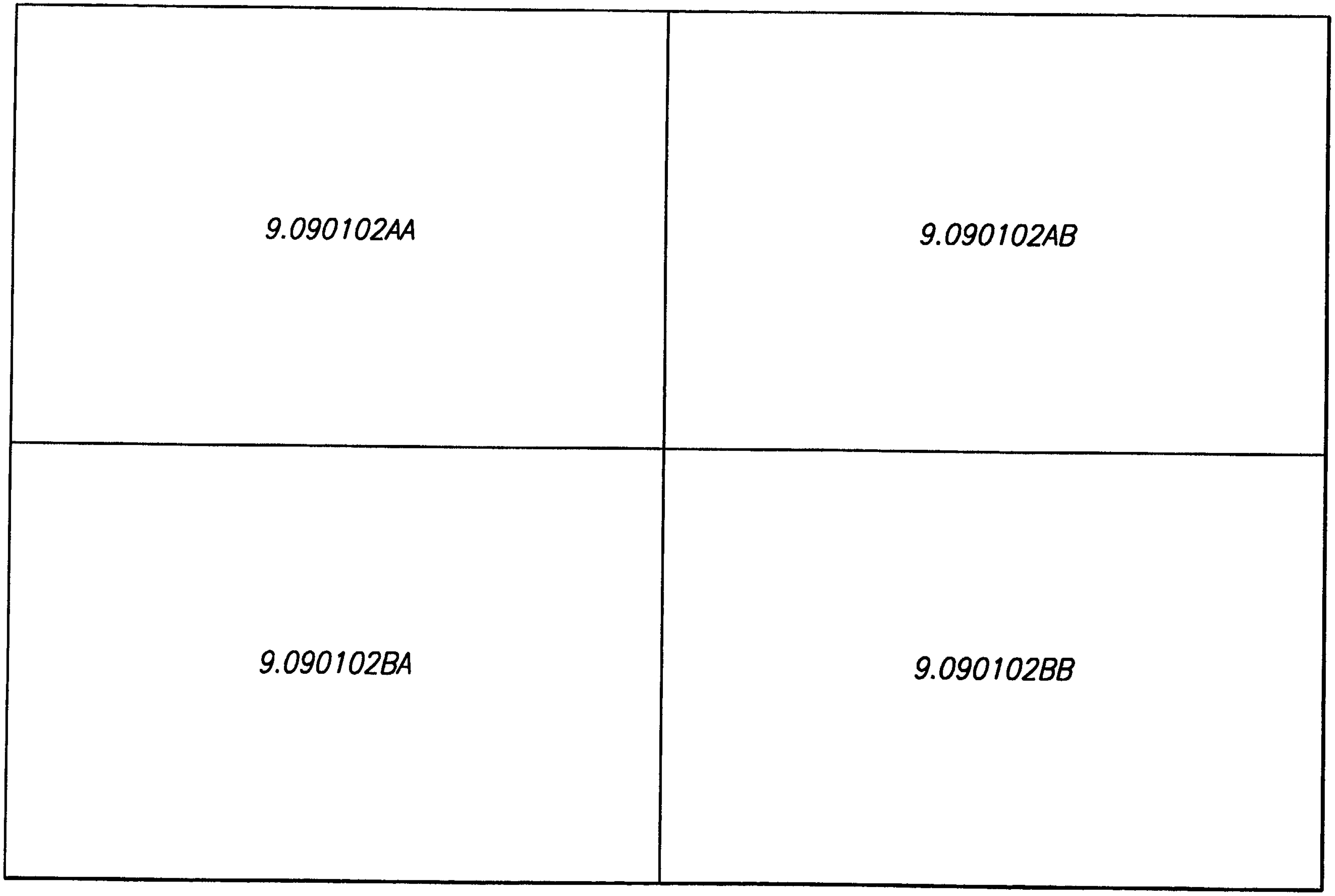


Fig 9.090102

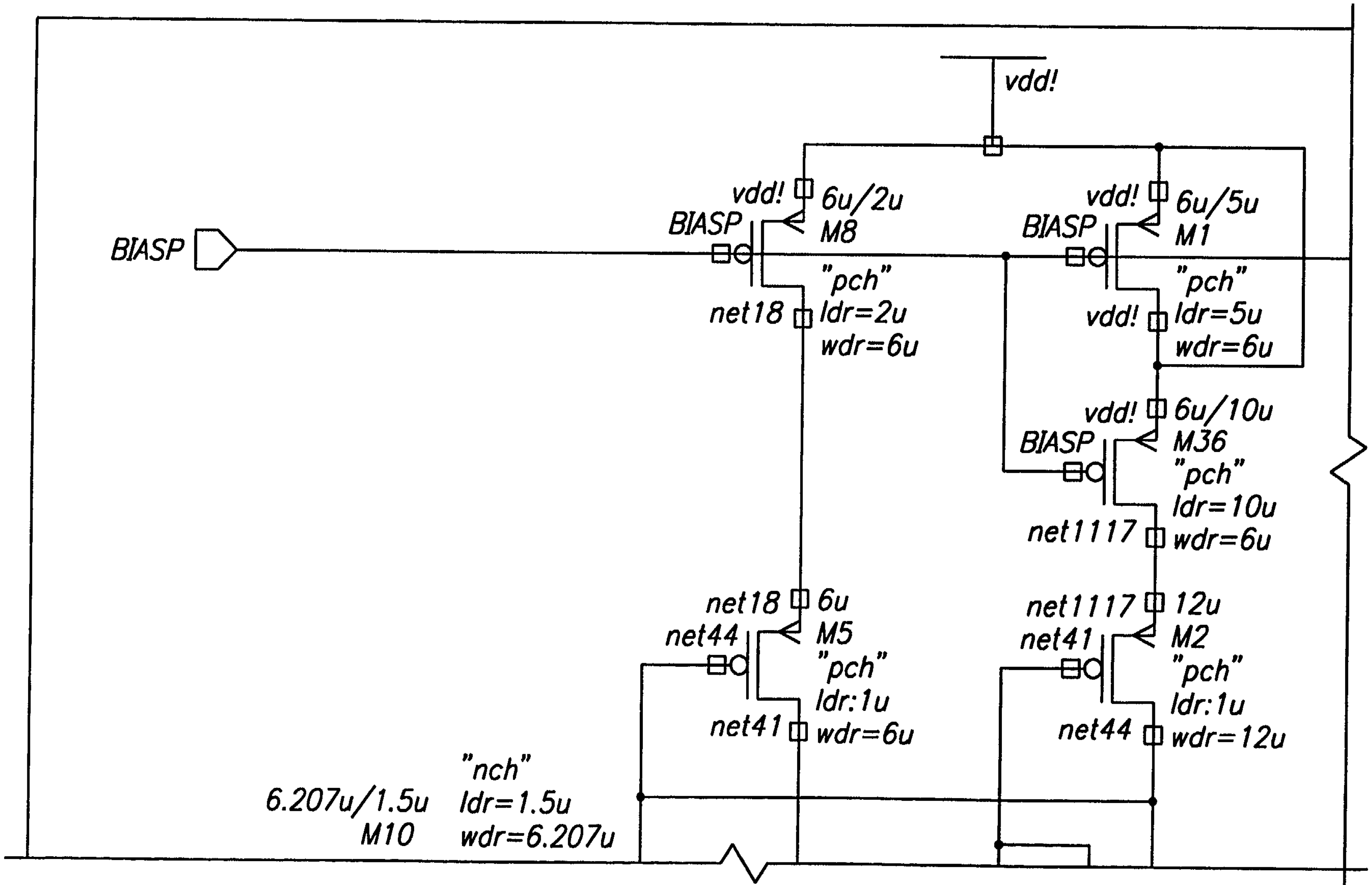


Fig 9.090102AA

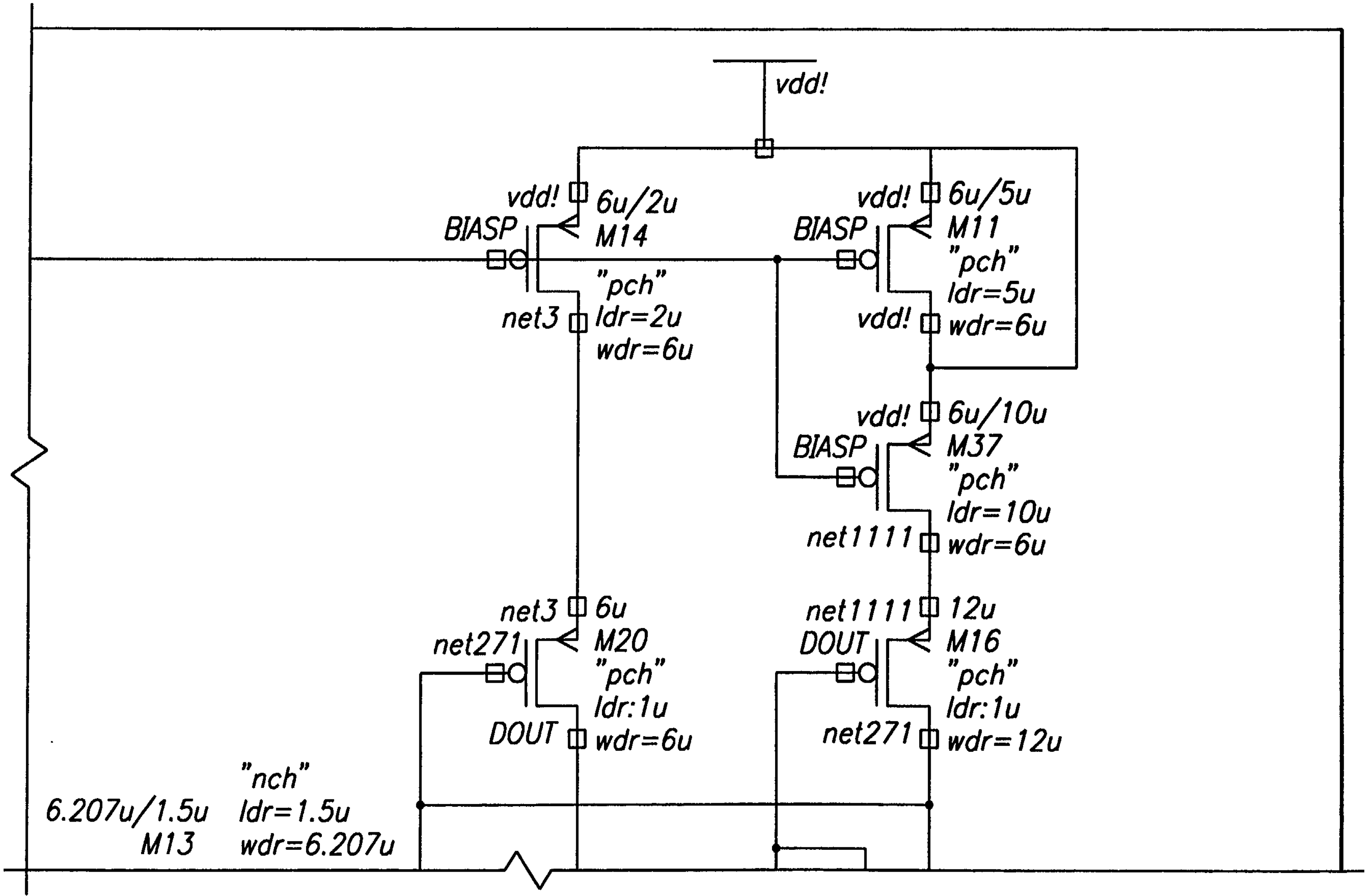


Fig 9.090102AB

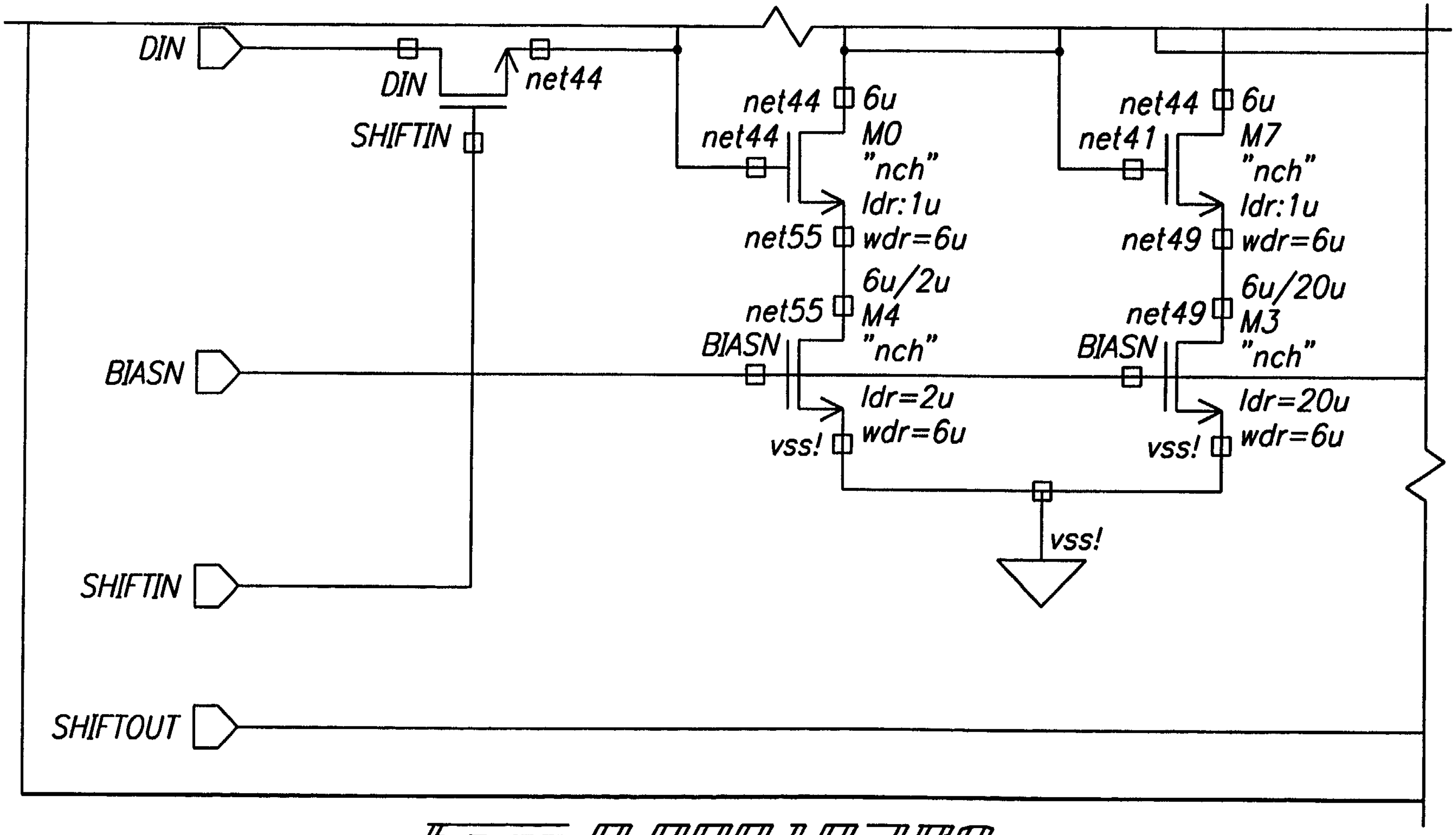


Fig 9.090102BA

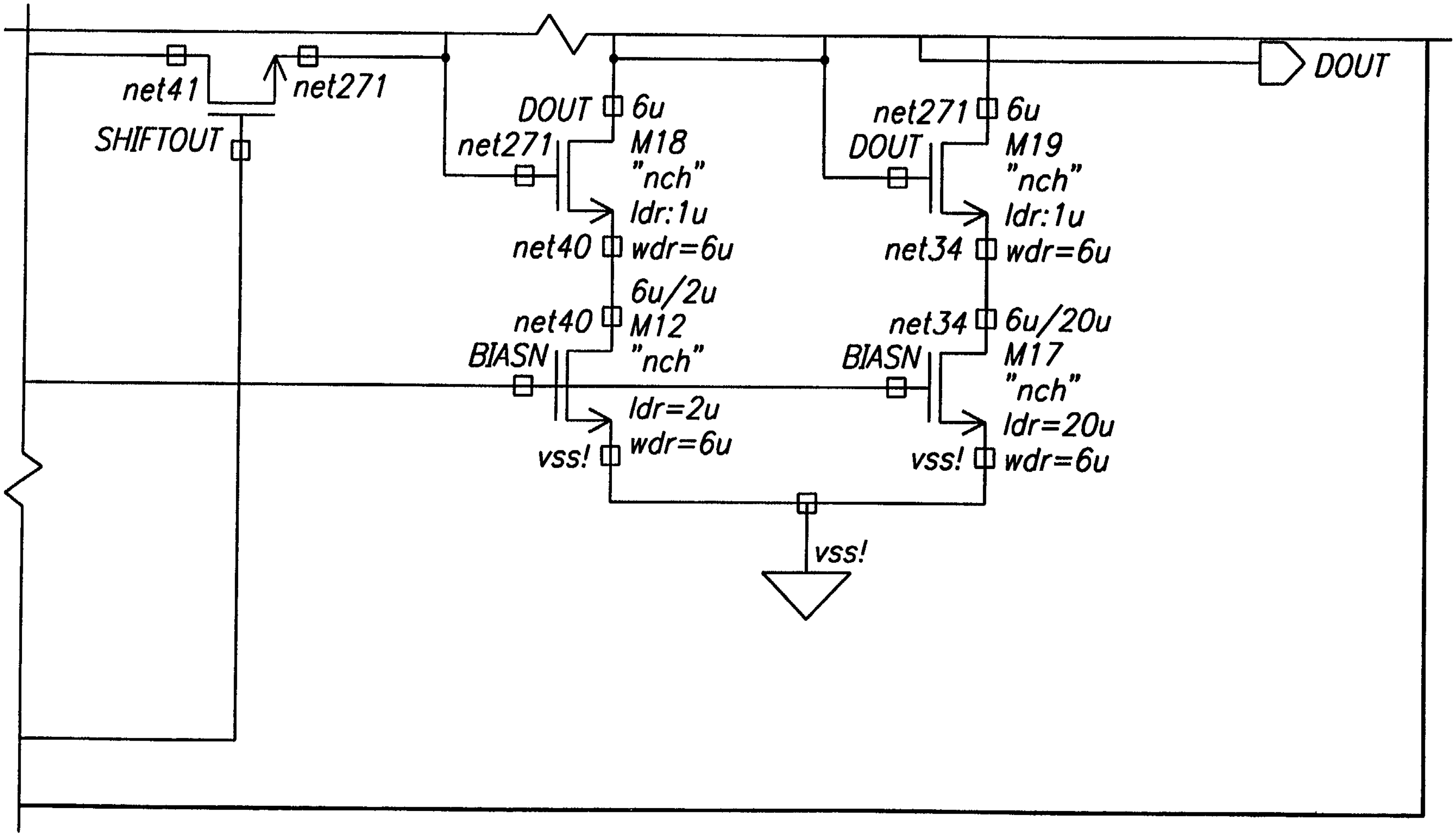


Fig 9.090102BB

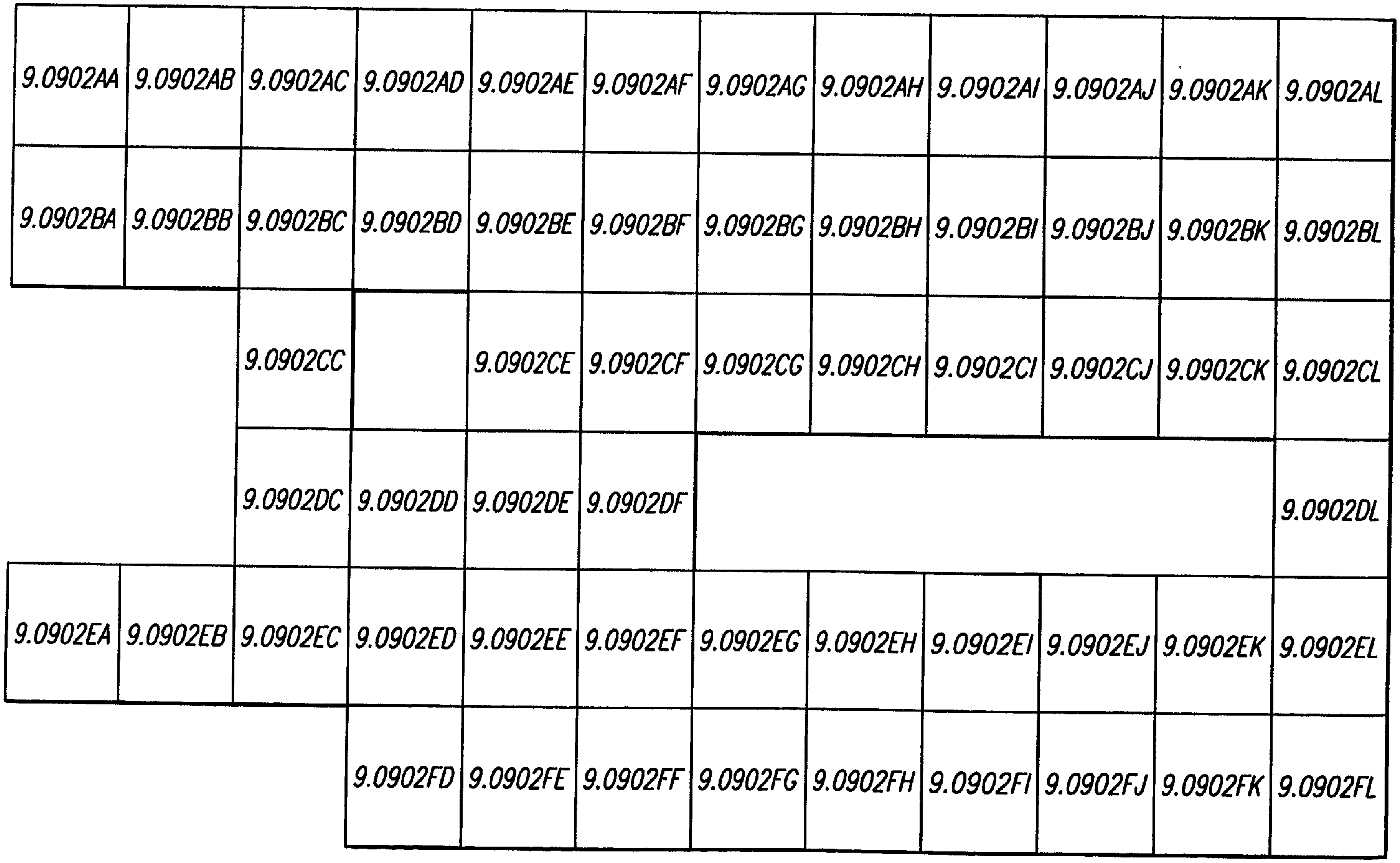

9.0902AA
9.0902AB
9.0902AC
9.0902AD
9.0902AE
9.0902AF
9.0902AG
9.0902AH
9.0902AI
9.0902AJ
9.0902AK
9.0902AL
9.0902BA
9.0902BB
9.0902BC
9.0902BD
9.0902BE
9.0902BF
9.0902BG
9.0902BH
9.0902BI
9.0902BJ
9.0902BK
9.0902BL
9.0902CC
9.0902CE
9.0902CF
9.0902CG
9.0902CH
9.0902CI
9.0902CJ
9.0902CK
9.0902CL
9.0902DC
9.0902DD
9.0902DE
9.0902DF
9.0902DL
9.0902EA
9.0902EB
9.0902EC
9.0902ED
9.0902EE
9.0902EF
9.0902EG
9.0902EH
9.0902EI
9.0902EJ
9.0902EK
9.0902EL
9.0902FD
9.0902FE
9.0902FF
9.0902FG
9.0902FH
9.0902FI
9.0902FJ
9.0902FK
9.0902FL

FIG 9.0902

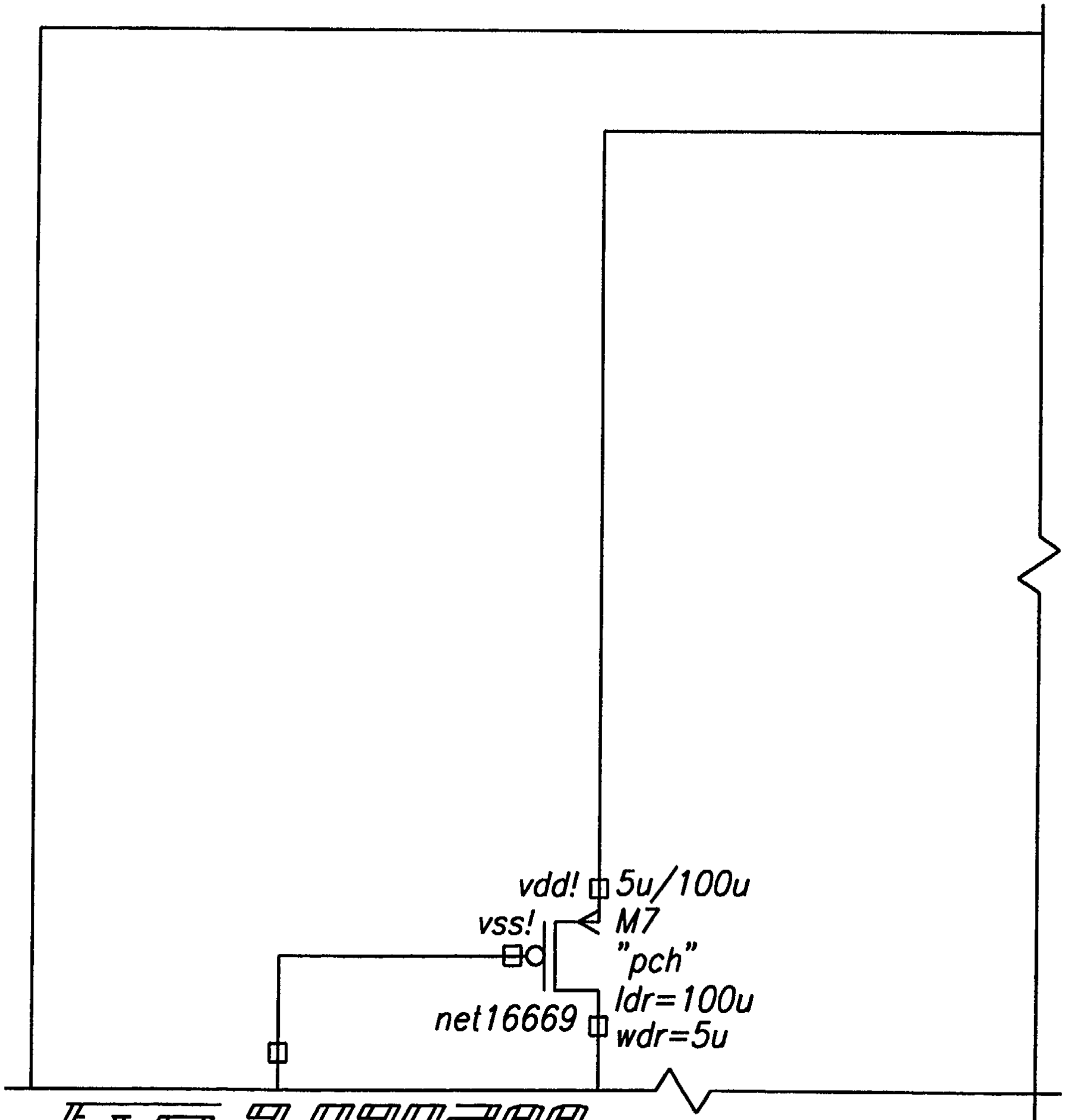


Fig 9.0902AA

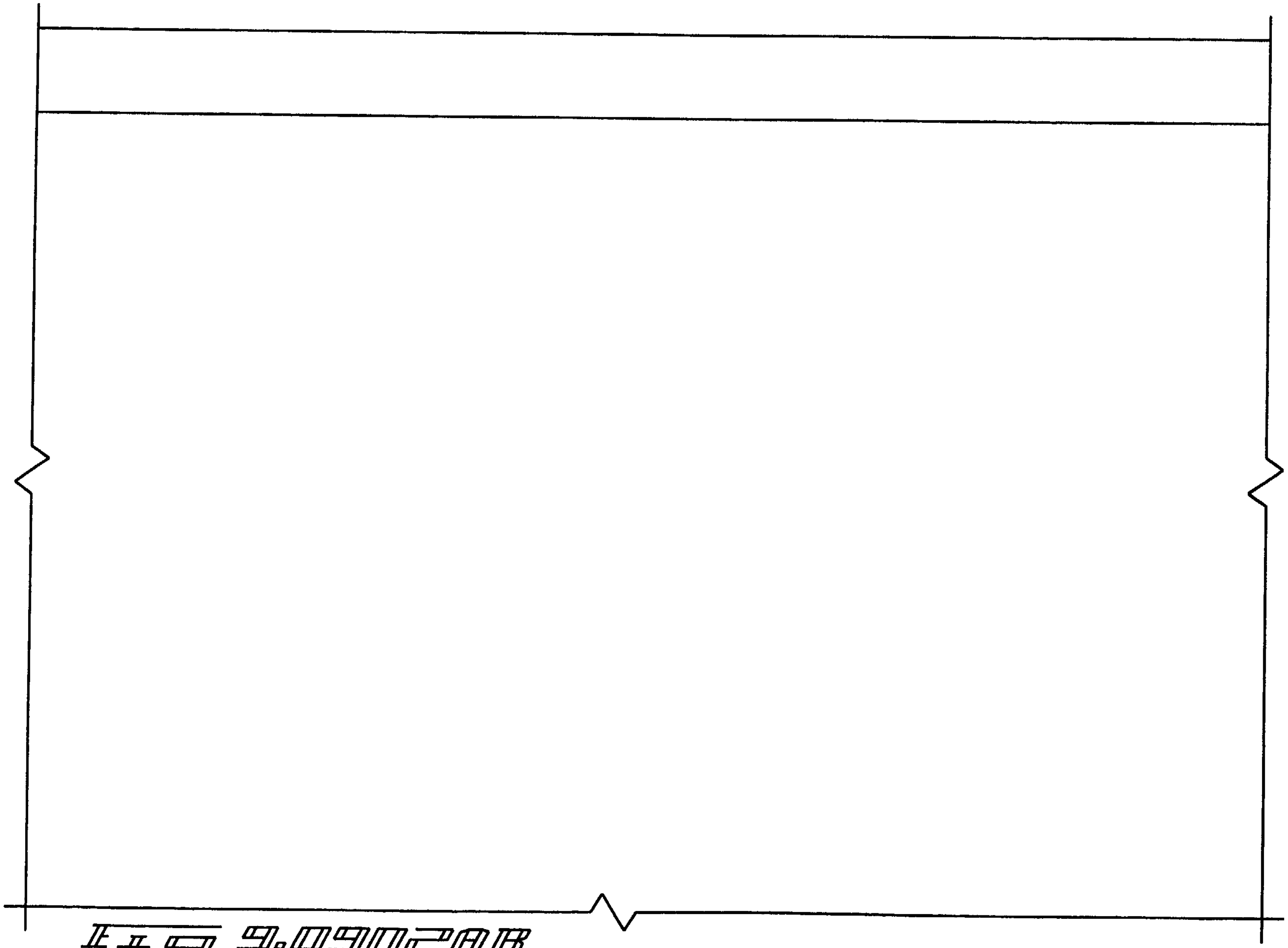


Fig 9.0902AB

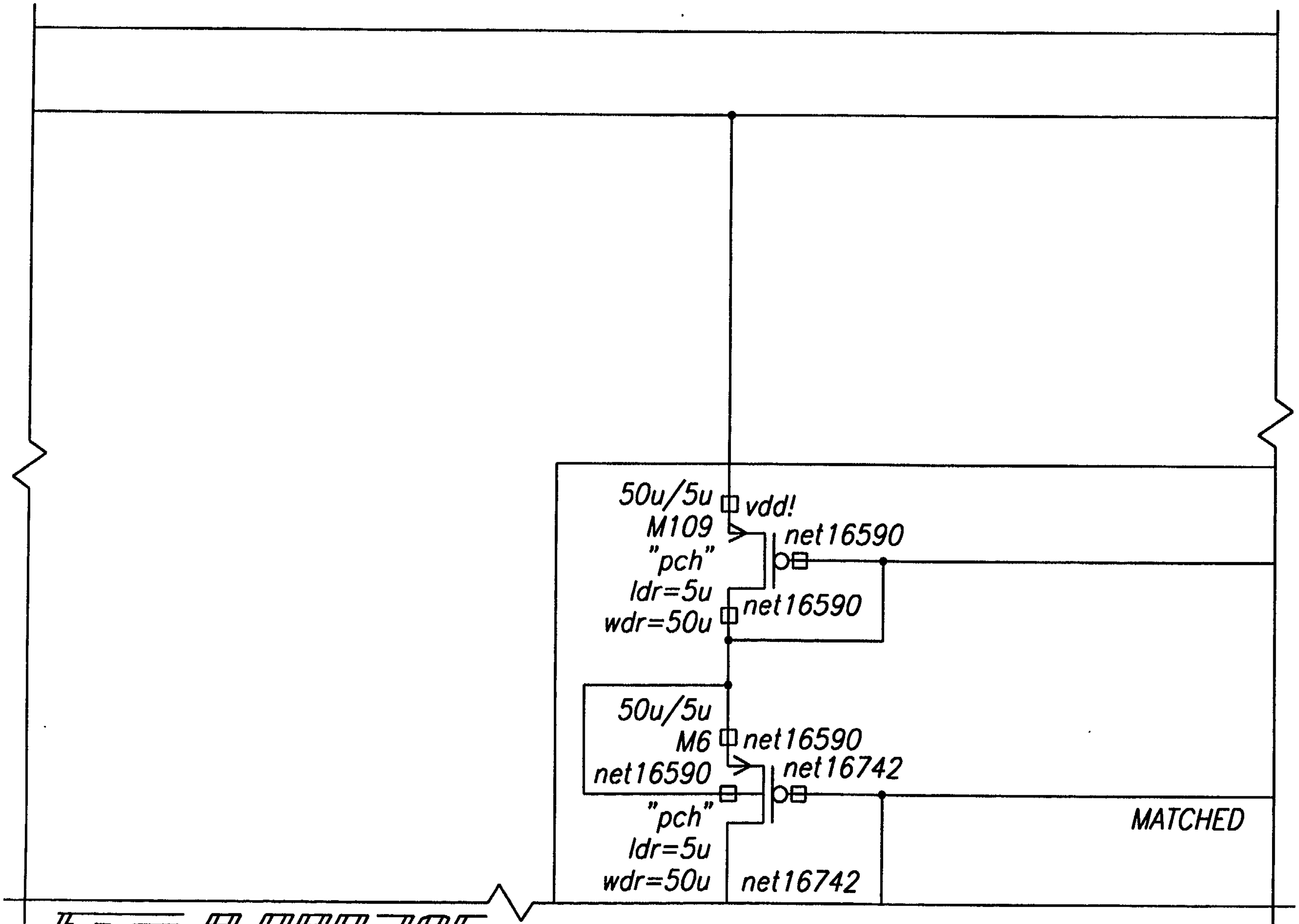

50u/5u
M109
"pch"
ldr=5u
wdr=50u
vdd!
net16590
net16590
50u/5u
M6
net16590
"pch"
ldr=5u
wdr=50u
net16590
net16742
net16742
MATCHED

FIG 9.0902AC

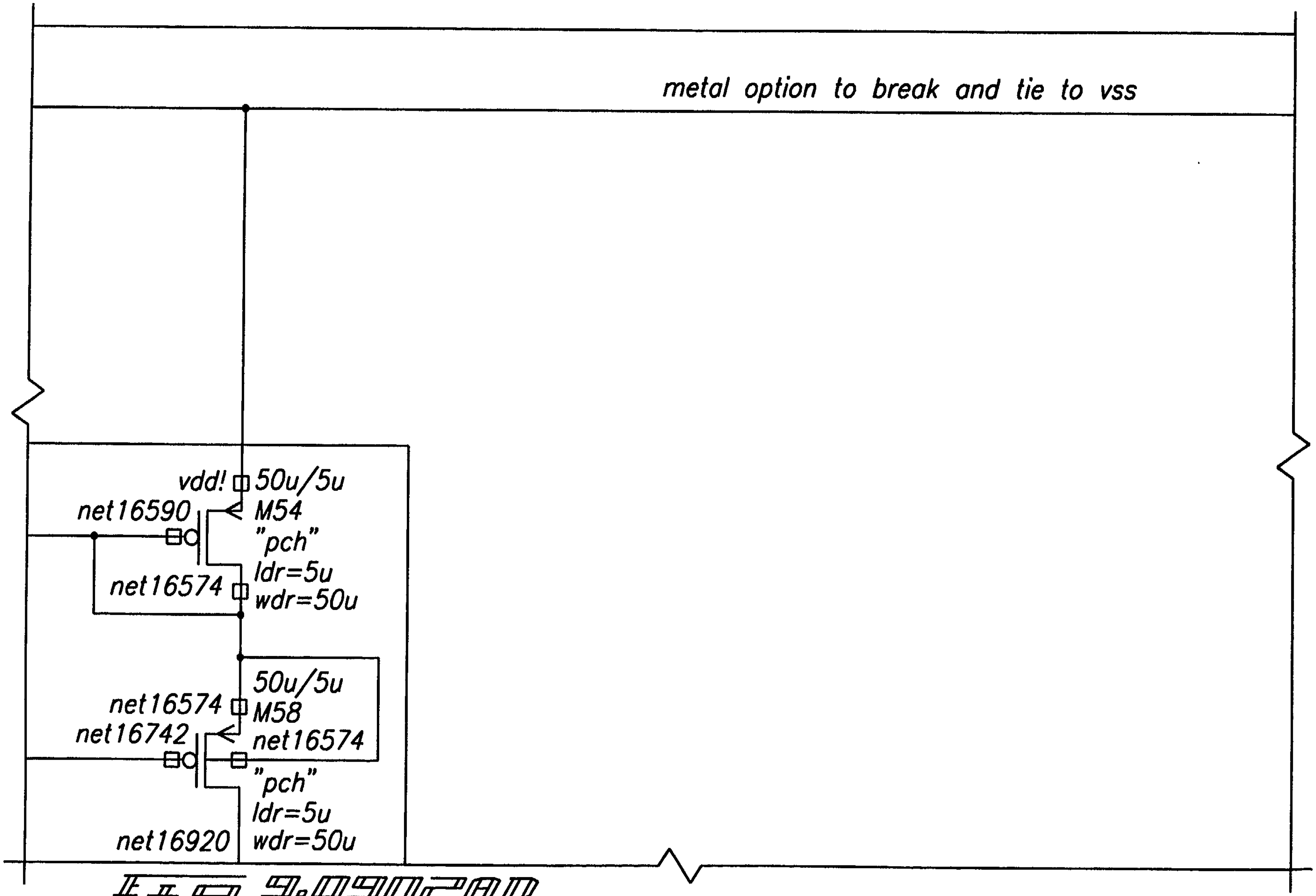

metal option to break and tie to vss
vdd!
50u/5u
M54
net16590
"pch"
ldr=5u
net16574
wdr=50u
50u/5u
net16574
M58
net16742
net16574
"pch"
ldr=5u
net16920
wdr=50u

Fig 9.0902AD

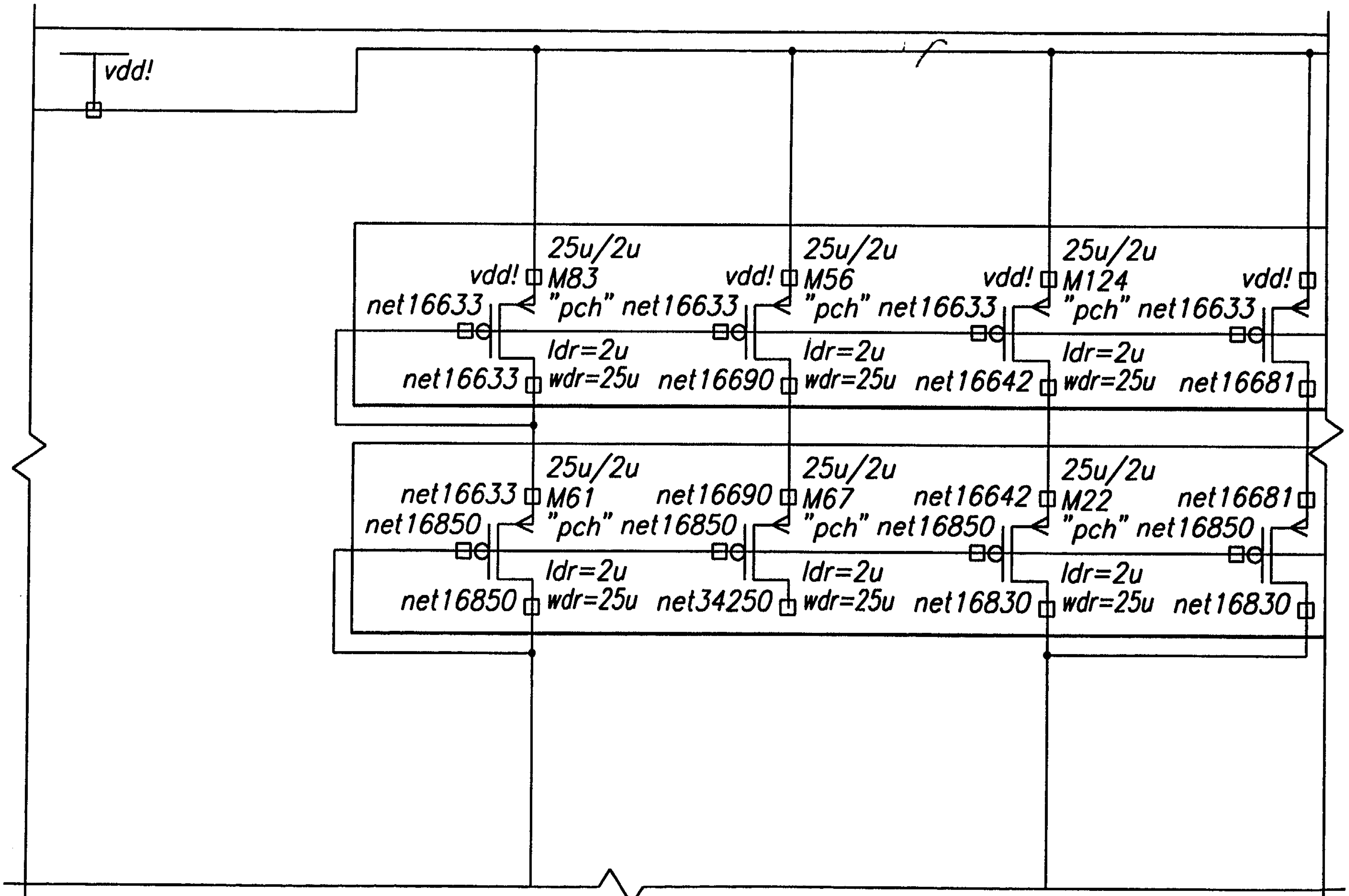

vdd!
25u/2u
vdd!
M83
"pch"
net16633
net16633
ldr=2u
wdr=25u
net16633
25u/2u
vdd!
M56
"pch"
net16633
ldr=2u
wdr=25u
net16690
25u/2u
vdd!
M124
"pch"
net16633
ldr=2u
wdr=25u
net16642
vdd!
net16681
25u/2u
net16633
M61
"pch"
net16850
net16850
ldr=2u
wdr=25u
net16850
25u/2u
net16690
M67
"pch"
net16850
ldr=2u
wdr=25u
net34250
25u/2u
net16642
M22
"pch"
net16850
ldr=2u
wdr=25u
net16830
net16681
net16830

Fig 9.0902AE

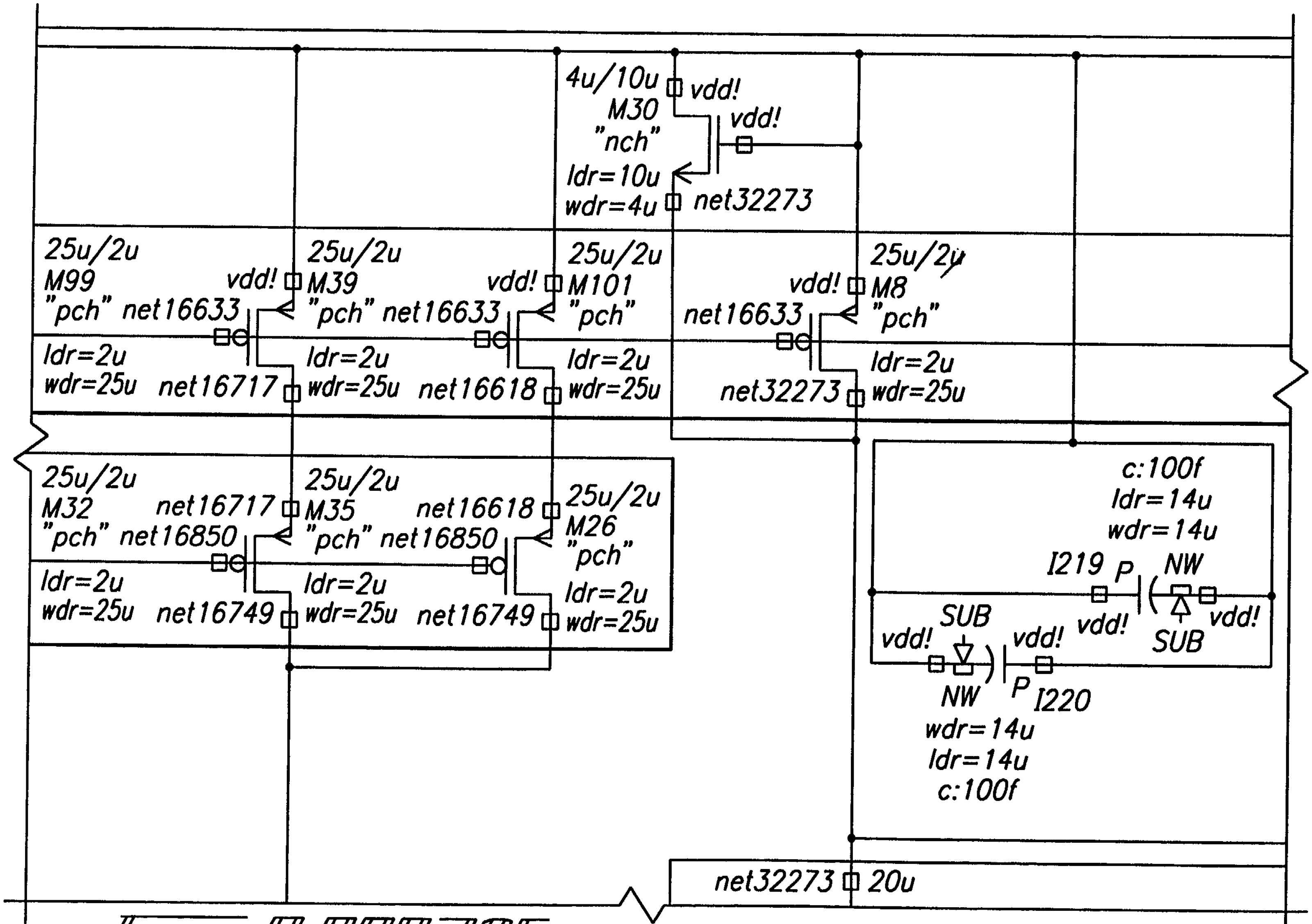

4u/10u
M30
"nch"
ldr=10u
wdr=4u
vdd!
vdd!
net32273
25u/2u
M99
"pch"
net16633
vdd!
ldr=2u
wdr=25u
net16717
25u/2u
M39
"pch"
net16633
vdd!
ldr=2u
wdr=25u
net16618
25u/2u
M101
"pch"
vdd!
ldr=2u
wdr=25u
25u/2u
M8
"pch"
vdd!
net16633
ldr=2u
wdr=25u
net32273
25u/2u
M32
"pch"
net16717
net16850
ldr=2u
wdr=25u
net16749
25u/2u
M35
"pch"
net16618
net16850
ldr=2u
wdr=25u
net16749
25u/2u
M26
"pch"
ldr=2u
wdr=25u
c:100f
ldr=14u
wdr=14u
I219
P
NW
vdd!
vdd!
SUB
SUB
vdd!
vdd!
NW
P
I220
wdr=14u
ldr=14u
c:100f
net32273
20u

Fig 9.0902AF

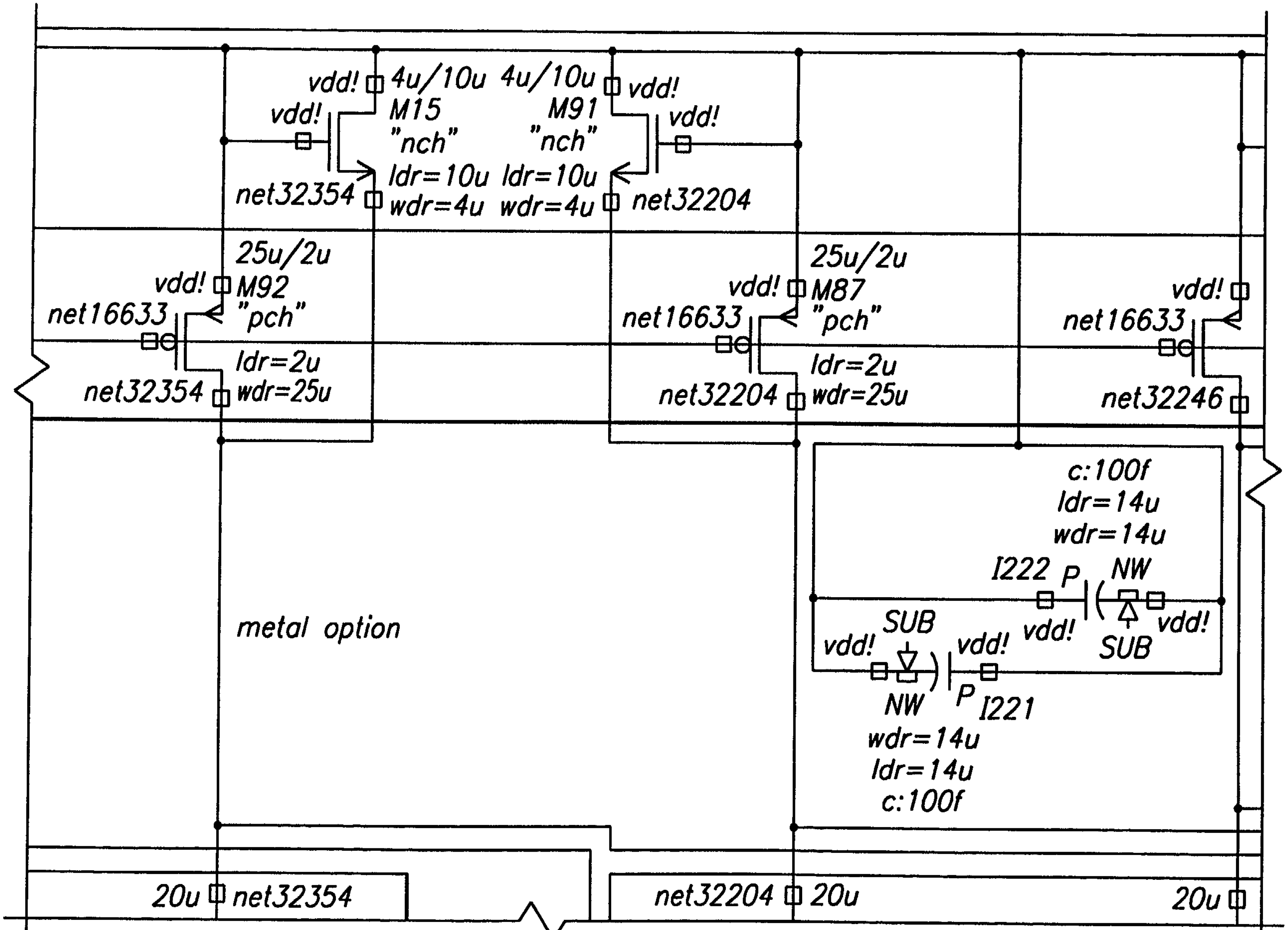

vdd!
4u/10u
M15
"nch"
ldr=10u
wdr=4u
net32354
vdd!
4u/10u
M91
"nch"
ldr=10u
wdr=4u
net32204
vdd!
vdd!
25u/2u
vdd!
M92
"pch"
net16633
ldr=2u
wdr=25u
net32354
25u/2u
vdd!
M87
"pch"
net16633
ldr=2u
wdr=25u
net32204
vdd!
net16633
net32246
c:100f
ldr=14u
wdr=14u
I222
P
NW
vdd!
SUB
vdd!
SUB
vdd!
vdd!
NW
P
I221
wdr=14u
ldr=14u
c:100f
metal option
20u
net32354
net32204
20u
20u

FIG. 9.0902AG

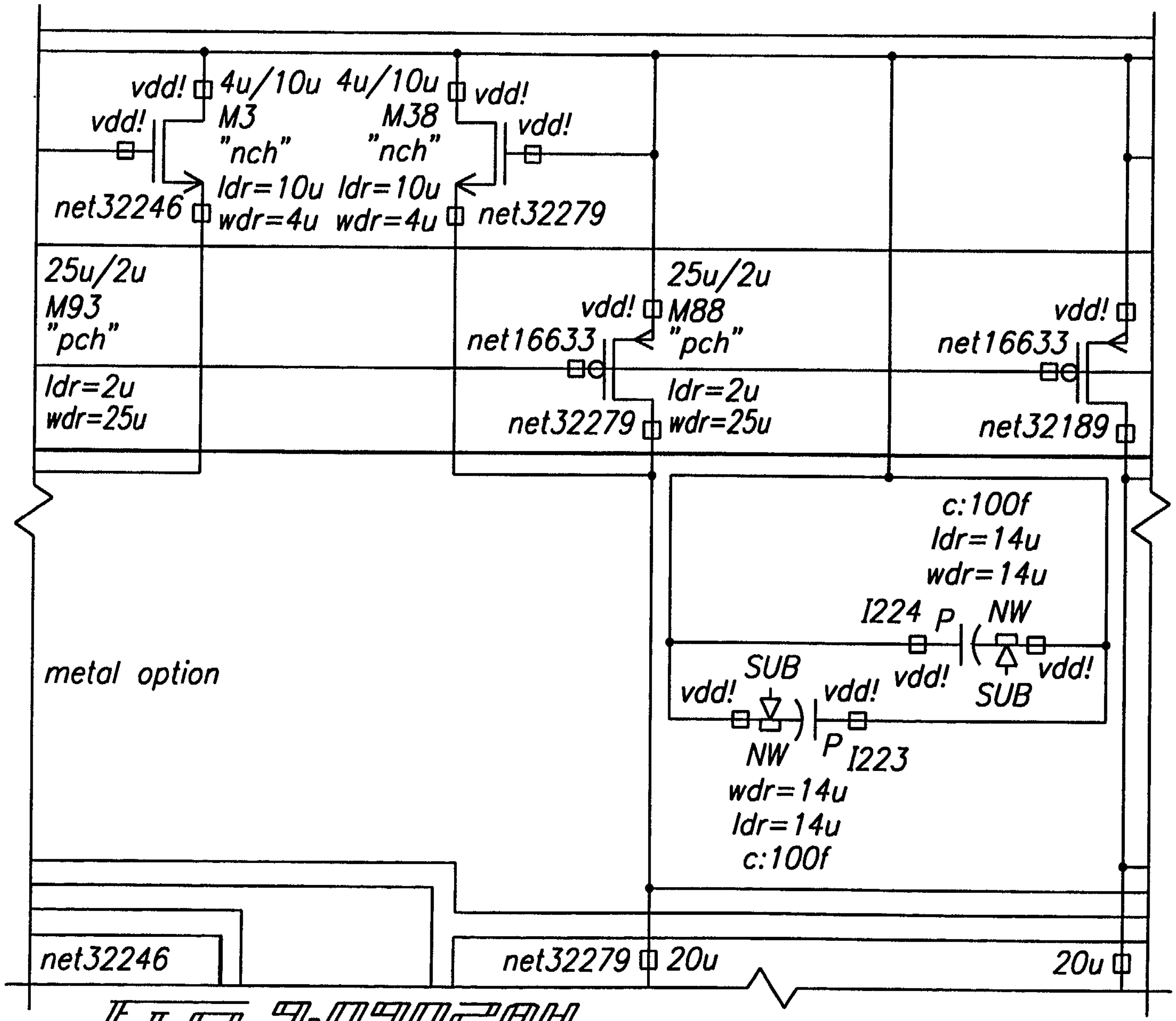

vdd!
vdd!
4u/10u
M3
"nch"
ldr=10u
wdr=4u
net32246
4u/10u
M38
"nch"
ldr=10u
wdr=4u
vdd!
vdd!
net32279
25u/2u
M93
"pch"
ldr=2u
wdr=25u
vdd!
net16633
net32279
25u/2u
M88
"pch"
ldr=2u
wdr=25u
vdd!
net16633
net32189
c:100f
ldr=14u
wdr=14u
I224
P
NW
vdd!
SUB
vdd!
SUB
vdd!
vdd!
NW
P
I223
wdr=14u
ldr=14u
c:100f
metal option
net32246
net32279
20u
20u

Fig 9.0902AH

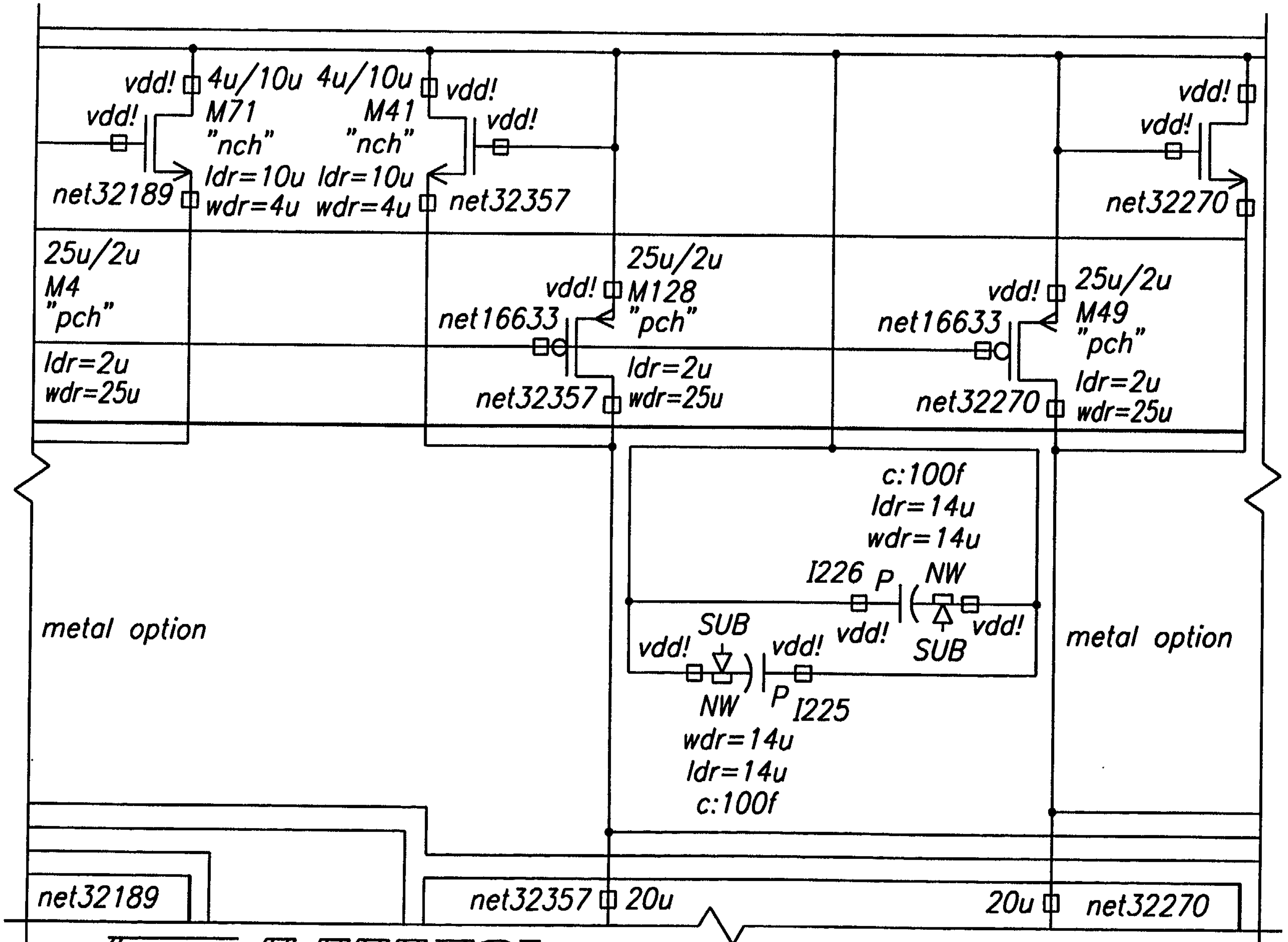

vdd!
vdd!
4u/10u
M71
"nch"
ldr=10u
wdr=4u
net32189
4u/10u
M41
"nch"
ldr=10u
wdr=4u
vdd!
vdd!
net32357
vdd!
vdd!
net32270
25u/2u
M4
"pch"
ldr=2u
wdr=25u
vdd!
25u/2u
M128
"pch"
net16633
ldr=2u
wdr=25u
net32357
vdd!
25u/2u
M49
"pch"
net16633
ldr=2u
wdr=25u
net32270
c:100f
ldr=14u
wdr=14u
I226
P
NW
vdd!
SUB
vdd!
SUB
vdd!
vdd!
NW
P
I225
wdr=14u
ldr=14u
c:100f
metal option
metal option
net32189
net32357
20u
20u
net32270

FIG 9.0902AI

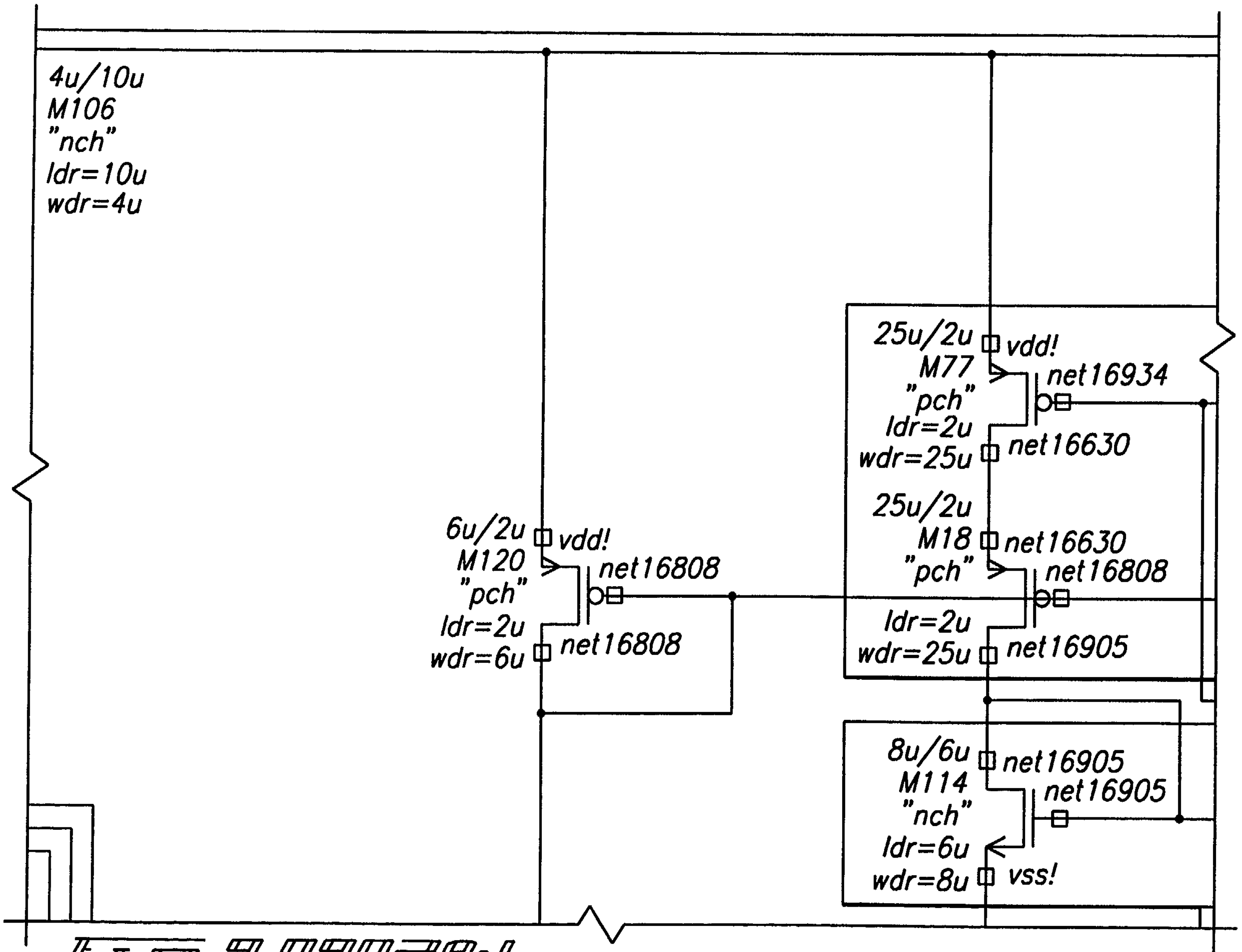

4u/10u
M106
"nch"
ldr=10u
wdr=4u
6u/2u
M120
"pch"
ldr=2u
wdr=6u
vdd!
net16808
net16808
25u/2u
M77
"pch"
ldr=2u
wdr=25u
vdd!
net16934
net16630
25u/2u
M18
"pch"
ldr=2u
wdr=25u
net16630
net16808
net16905
8u/6u
M114
"nch"
ldr=6u
wdr=8u
net16905
net16905
vss!

Fig 9.0902AJ

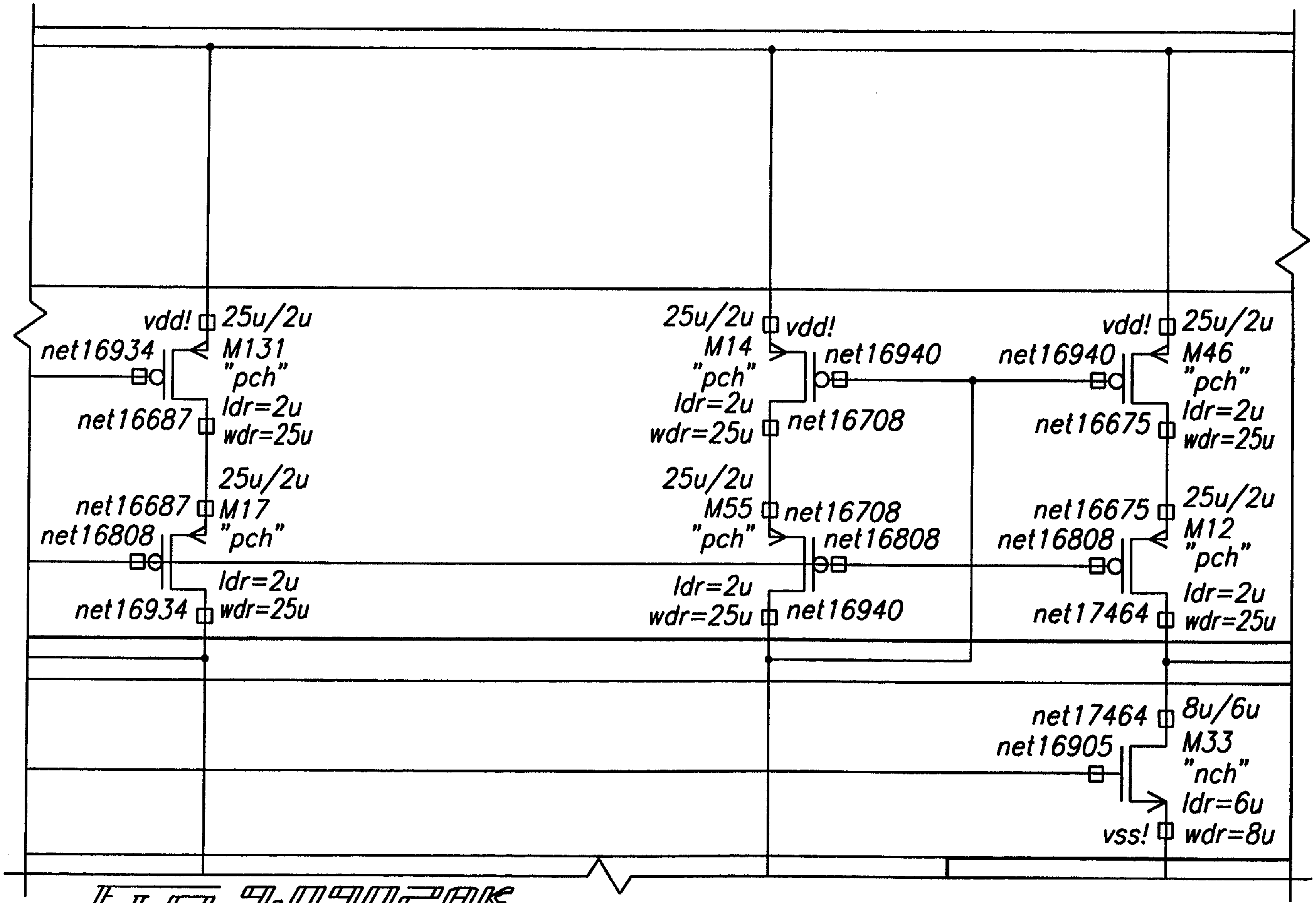

vdd!
25u/2u
M131
"pch"
ldr=2u
wdr=25u
net16934
net16687
25u/2u
M17
"pch"
net16687
net16808
ldr=2u
wdr=25u
net16934
25u/2u
M14
"pch"
ldr=2u
wdr=25u
vdd!
net16940
net16708
25u/2u
M55
"pch"
net16708
net16808
ldr=2u
wdr=25u
net16940
vdd!
25u/2u
M46
"pch"
ldr=2u
wdr=25u
net16940
net16675
net16675
net16808
25u/2u
M12
"pch"
ldr=2u
wdr=25u
net17464
net17464
net16905
8u/6u
M33
"nch"
ldr=6u
wdr=8u
vss!

Fig 9.0902AK

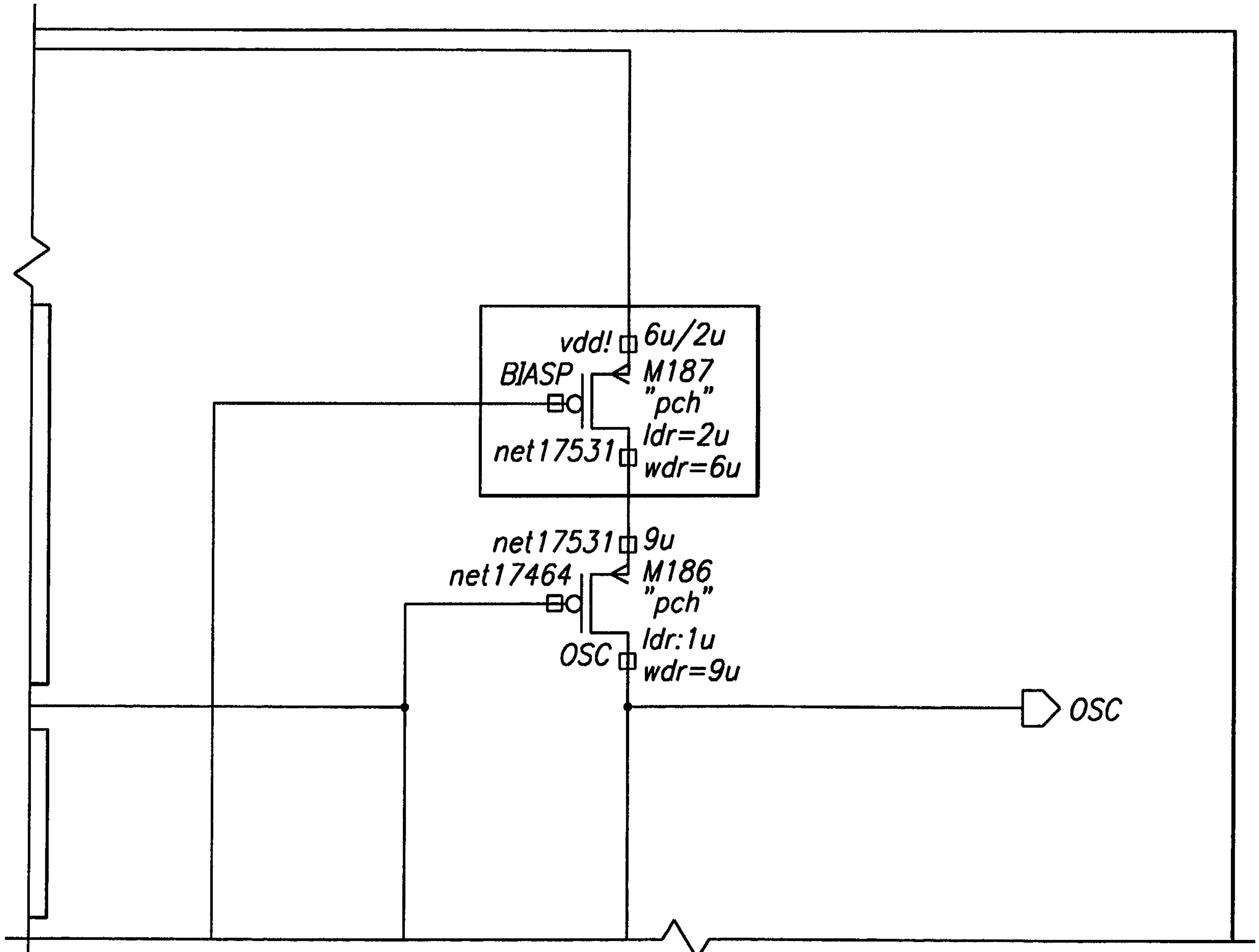
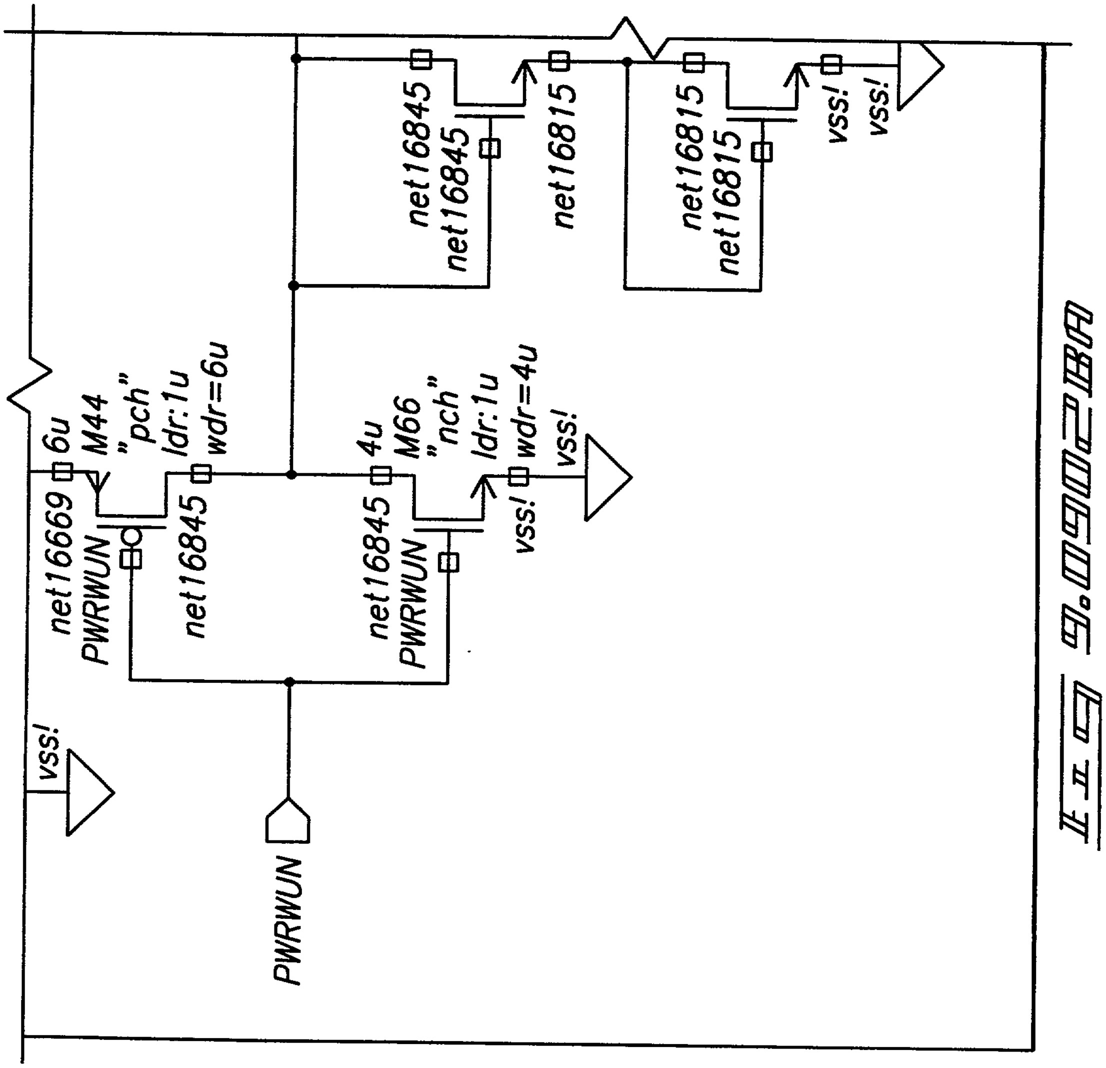

vdd!
6u/2u
M187
"pch"
BIASP
net17531
ldr=2u
wdr=6u
net17531
9u
M186
"pch"
net17464
OSC
ldr:1u
wdr=9u
OSC

FIG 9.0902AL



net16845
net16845
net16815
net16815
net16815
vss!
vss!
6u
M44
"pch"
ldr:1u
wdr=6u
net16669
PWRWUN
net16845
4u
M66
"nch"
ldr:1u
wdr=4u
vss!
vss!
net16845
PWRWUN
vss!
PWRWUN

FIG 9.09.02BA

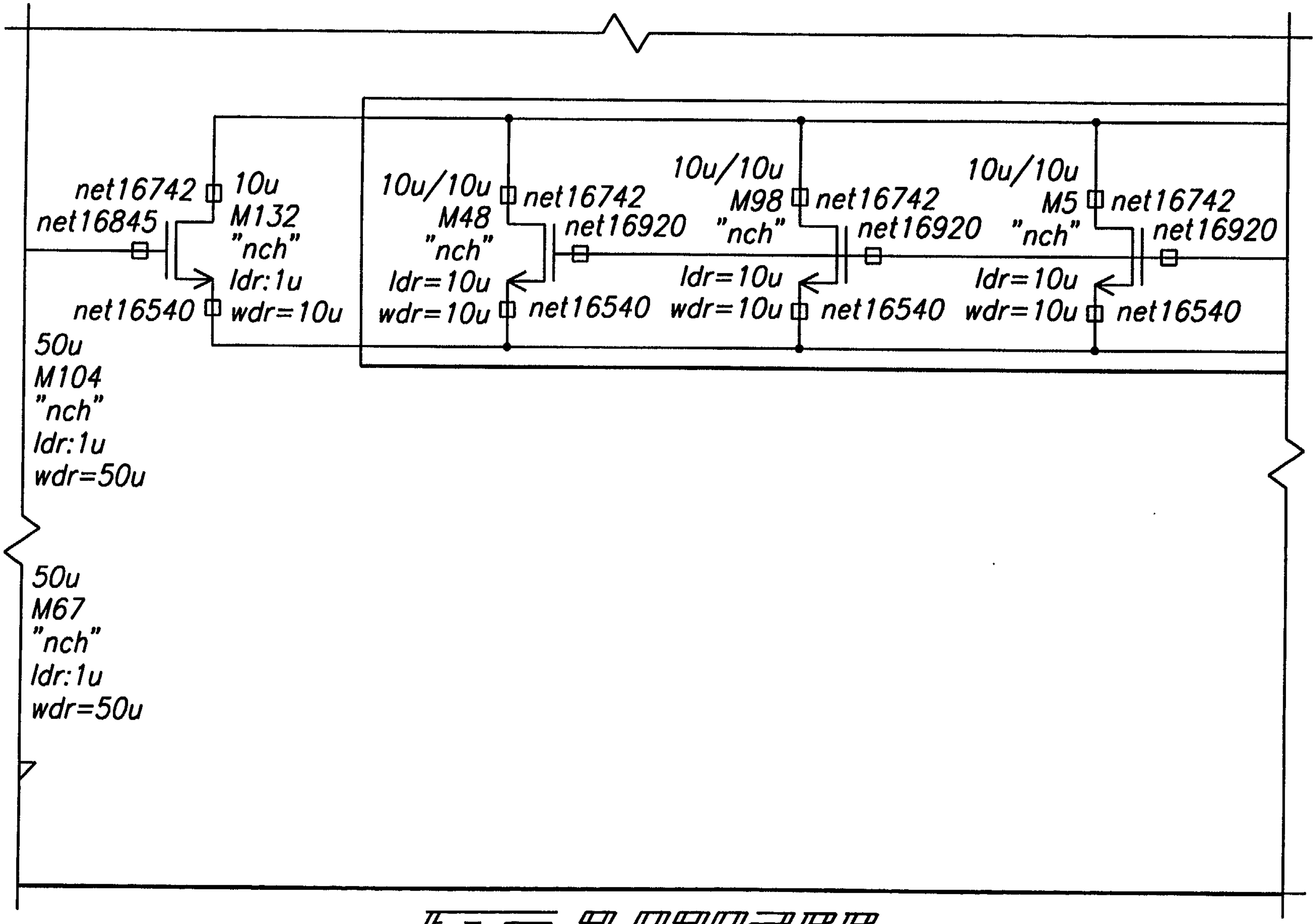

net16742
net16845
net16540
10u
M132
"nch"
ldr:1u
wdr=10u
50u
M104
"nch"
ldr:1u
wdr=50u
50u
M67
"nch"
ldr:1u
wdr=50u
10u/10u
M48
"nch"
ldr=10u
wdr=10u
net16742
net16920
net16540
10u/10u
M98
"nch"
ldr=10u
wdr=10u
net16742
net16920
net16540
10u/10u
M5
"nch"
ldr=10u
wdr=10u
net16742
net16920
net16540

Fig 9.0902BB

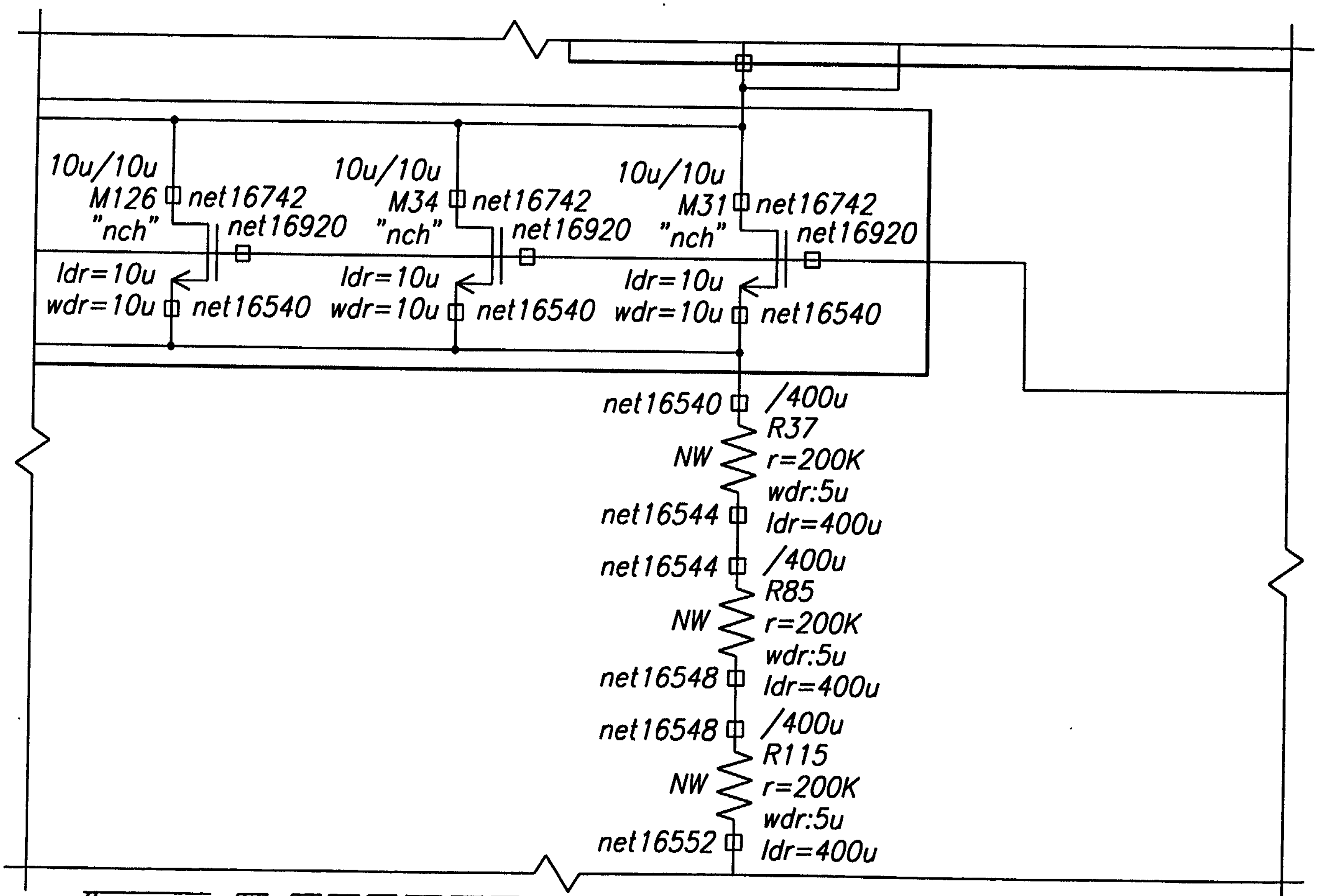

10u/10u
M126
"nch"
net16742
net16920
ldr=10u
wdr=10u
net16540
10u/10u
M34
"nch"
net16742
net16920
ldr=10u
wdr=10u
net16540
10u/10u
M31
"nch"
net16742
net16920
ldr=10u
wdr=10u
net16540
net16540
/400u
R37
NW
r=200K
wdr:5u
net16544
ldr=400u
net16544
/400u
R85
NW
r=200K
wdr:5u
net16548
ldr=400u
net16548
/400u
R115
NW
r=200K
wdr:5u
net16552
ldr=400u

Fig 9.0902BC

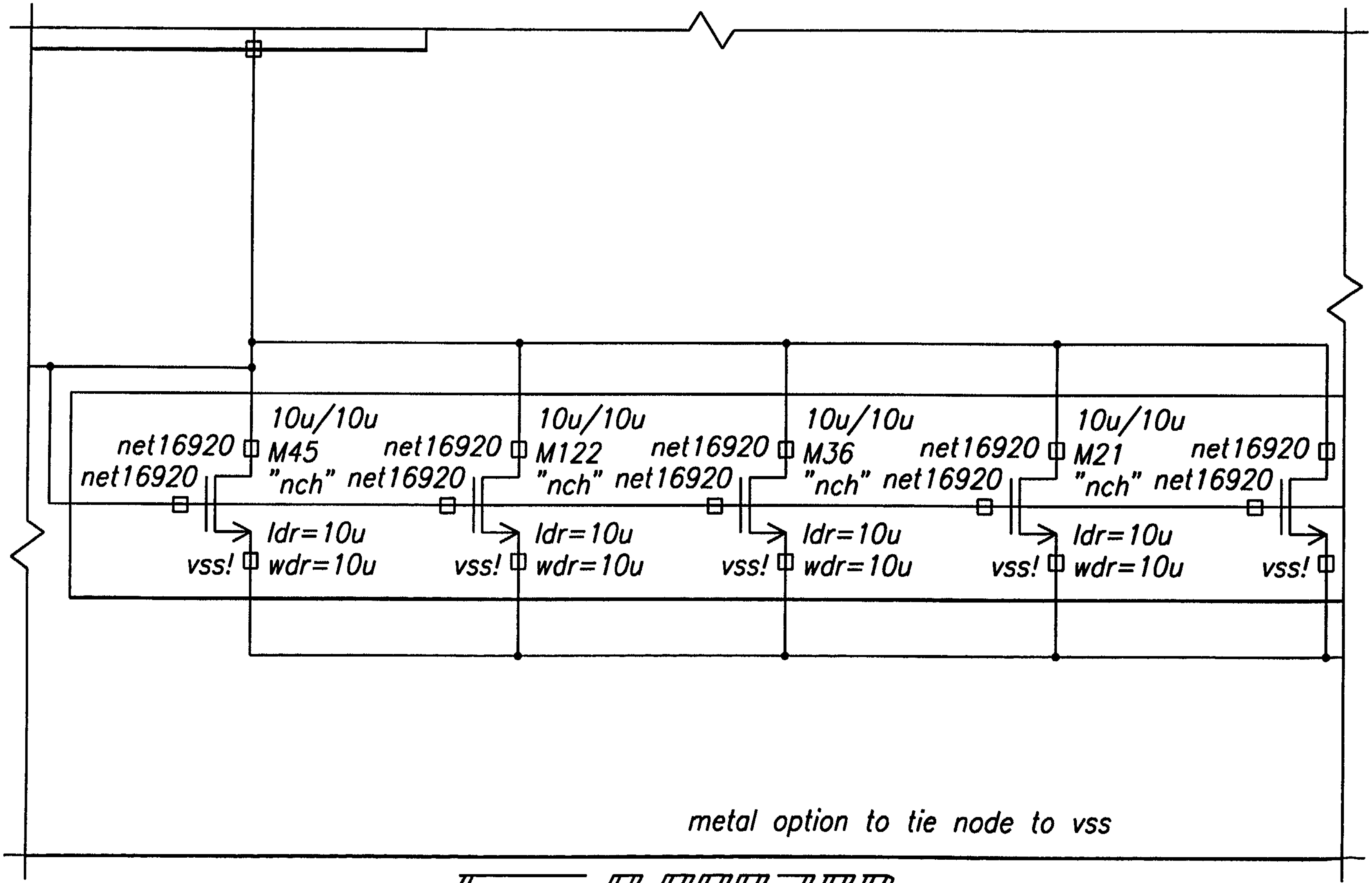

10u/10u
M45
"nch"
net16920
net16920
ldr=10u
wdr=10u
vss!
10u/10u
M122
"nch"
net16920
net16920
ldr=10u
wdr=10u
vss!
10u/10u
M36
"nch"
net16920
net16920
ldr=10u
wdr=10u
vss!
10u/10u
M21
"nch"
net16920
net16920
ldr=10u
wdr=10u
vss!
net16920
net16920
vss!
metal option to tie node to vss

Fig 9.0902BD

2739/3273

10171901 . 092850

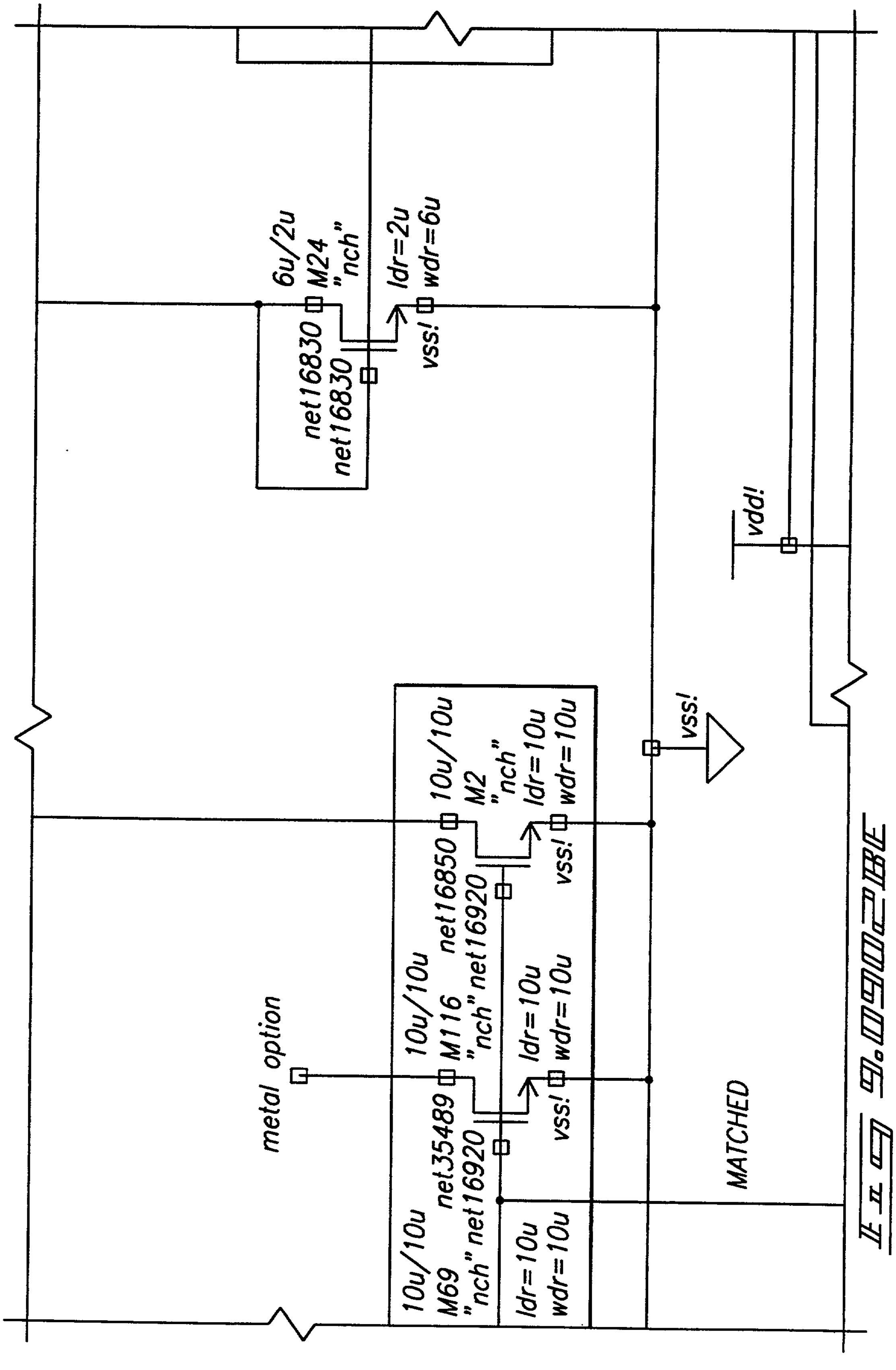


FIG 9.0902BE

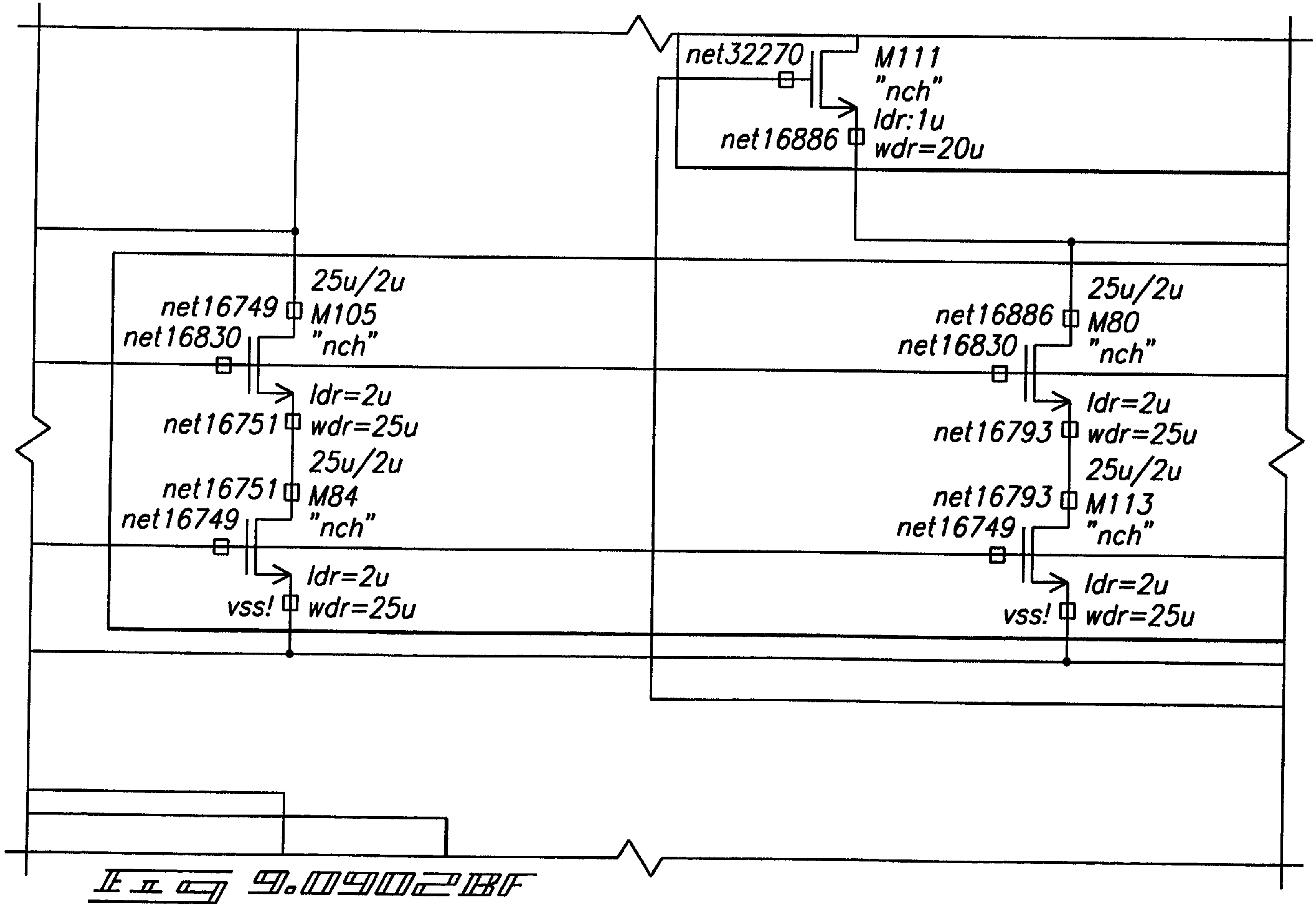

net32270
M111
"nch"
ldr:1u
net16886
wdr=20u
25u/2u
net16749
M105
net16830
"nch"
ldr=2u
net16751
wdr=25u
25u/2u
net16751
M84
net16749
"nch"
ldr=2u
vss!
wdr=25u
25u/2u
net16886
M80
net16830
"nch"
ldr=2u
net16793
wdr=25u
25u/2u
net16793
M113
net16749
"nch"
ldr=2u
vss!
wdr=25u

Fig 9.0902BF

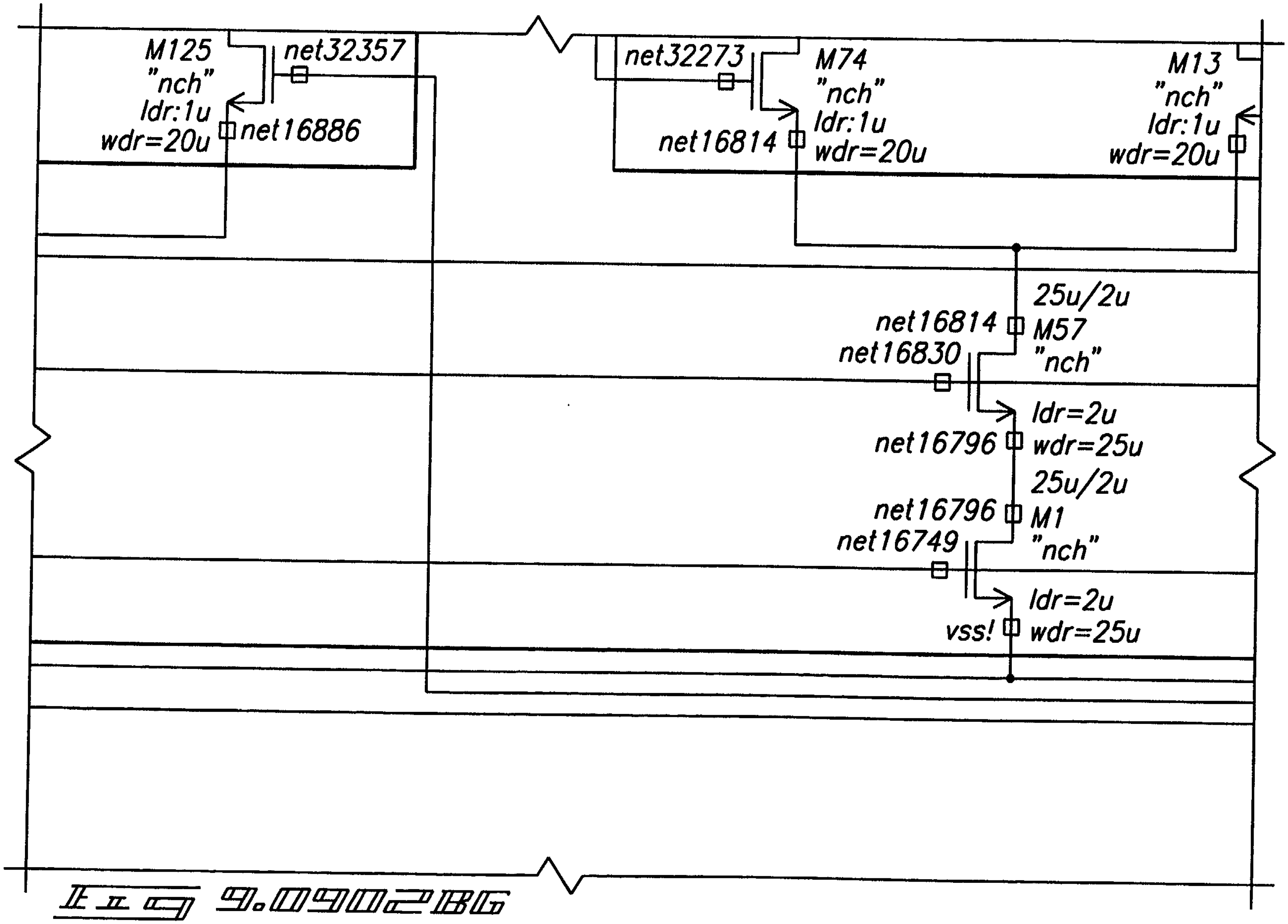

M125
"nch"
ldr:1u
wdr=20u
net32357
net16886
net32273
net16814
M74
"nch"
ldr:1u
wdr=20u
M13
"nch"
ldr:1u
wdr=20u
25u/2u
net16814
M57
"nch"
net16830
ldr=2u
net16796
wdr=25u
25u/2u
net16796
M1
"nch"
net16749
ldr=2u
vss!
wdr=25u

Fig. 9.0902BG

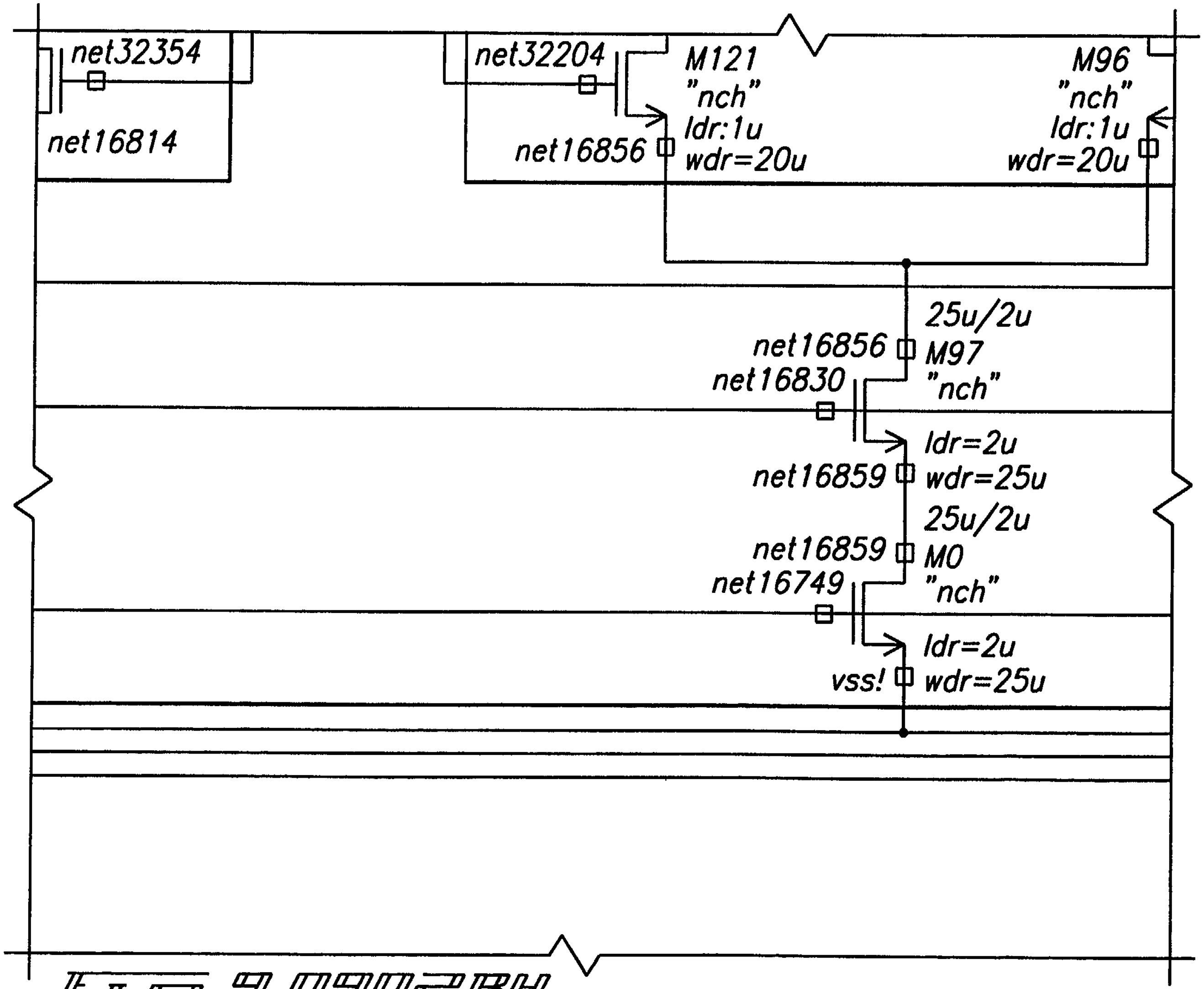

net32354
net16814
net32204
net16856
M121
"nch"
ldr:1u
wdr=20u
M96
"nch"
ldr:1u
wdr=20u
25u/2u
net16856
M97
"nch"
net16830
ldr=2u
net16859
wdr=25u
25u/2u
net16859
M0
"nch"
net16749
ldr=2u
vss!
wdr=25u

FIG. 9.0902BH

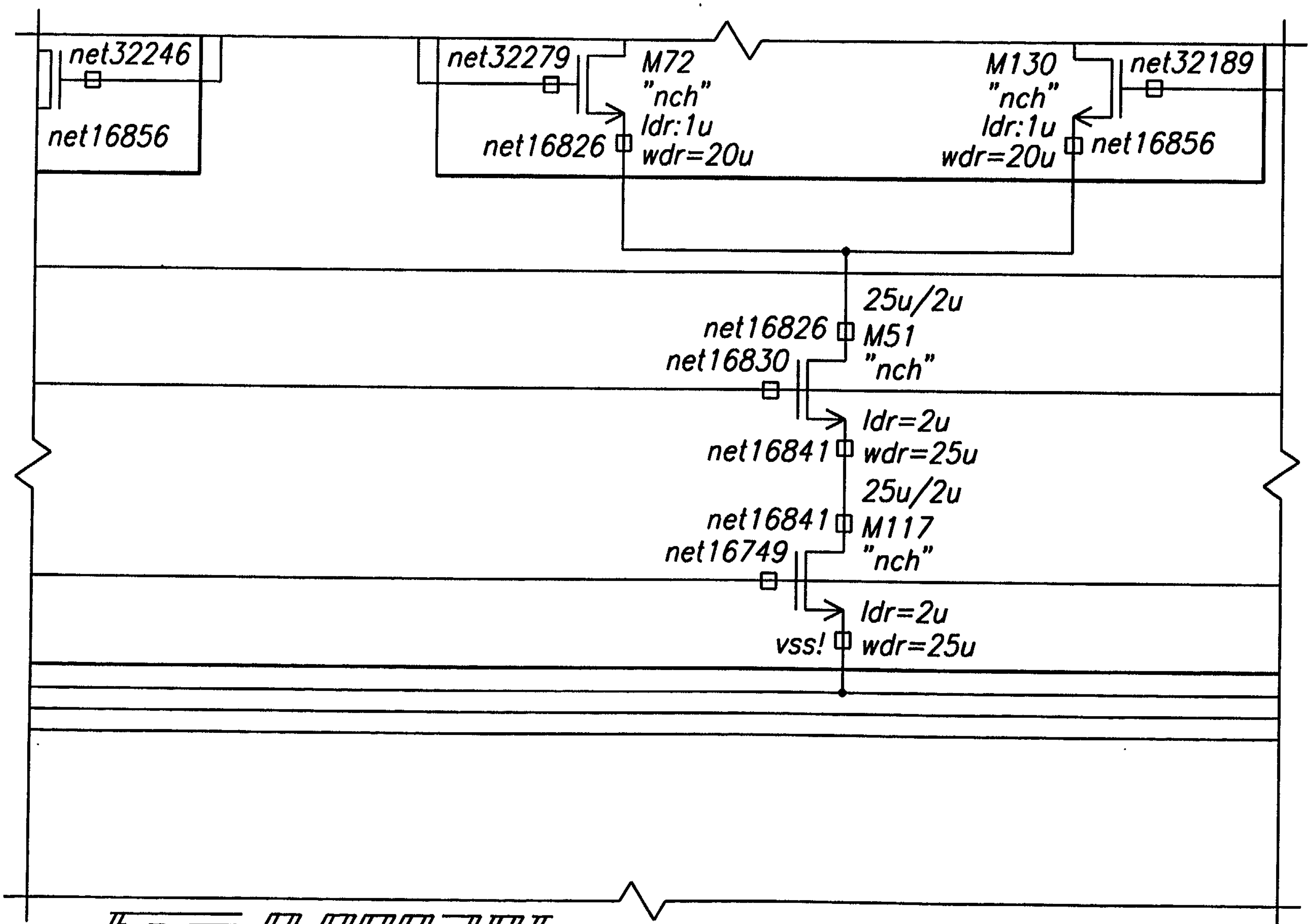

net32246
net16856
net32279
M72
"nch"
ldr:1u
wdr=20u
net16826
M130
"nch"
ldr:1u
wdr=20u
net32189
net16856
25u/2u
net16826
M51
"nch"
net16830
ldr=2u
wdr=25u
net16841
25u/2u
net16841
M117
"nch"
net16749
ldr=2u
wdr=25u
vss!

Fig 9.0902BI

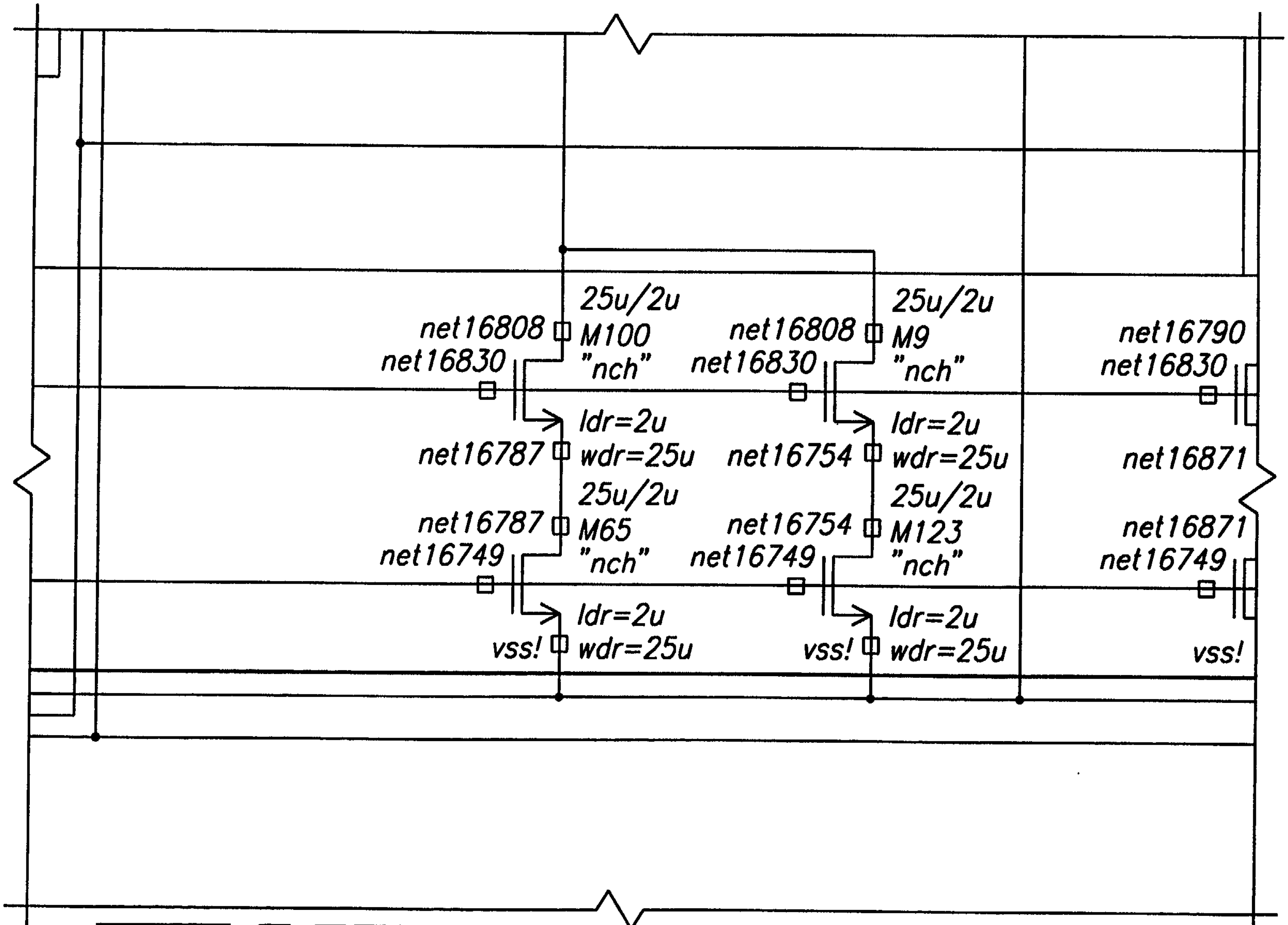

25u/2u
net16808
M100
"nch"
net16830
ldr=2u
net16787
wdr=25u
25u/2u
net16787
M65
"nch"
net16749
ldr=2u
vss!
wdr=25u
25u/2u
net16808
M9
"nch"
net16830
ldr=2u
net16754
wdr=25u
25u/2u
net16754
M123
"nch"
net16749
ldr=2u
vss!
wdr=25u
net16790
net16830
net16871
net16871
net16749
vss!

Fig 9.0902BJ

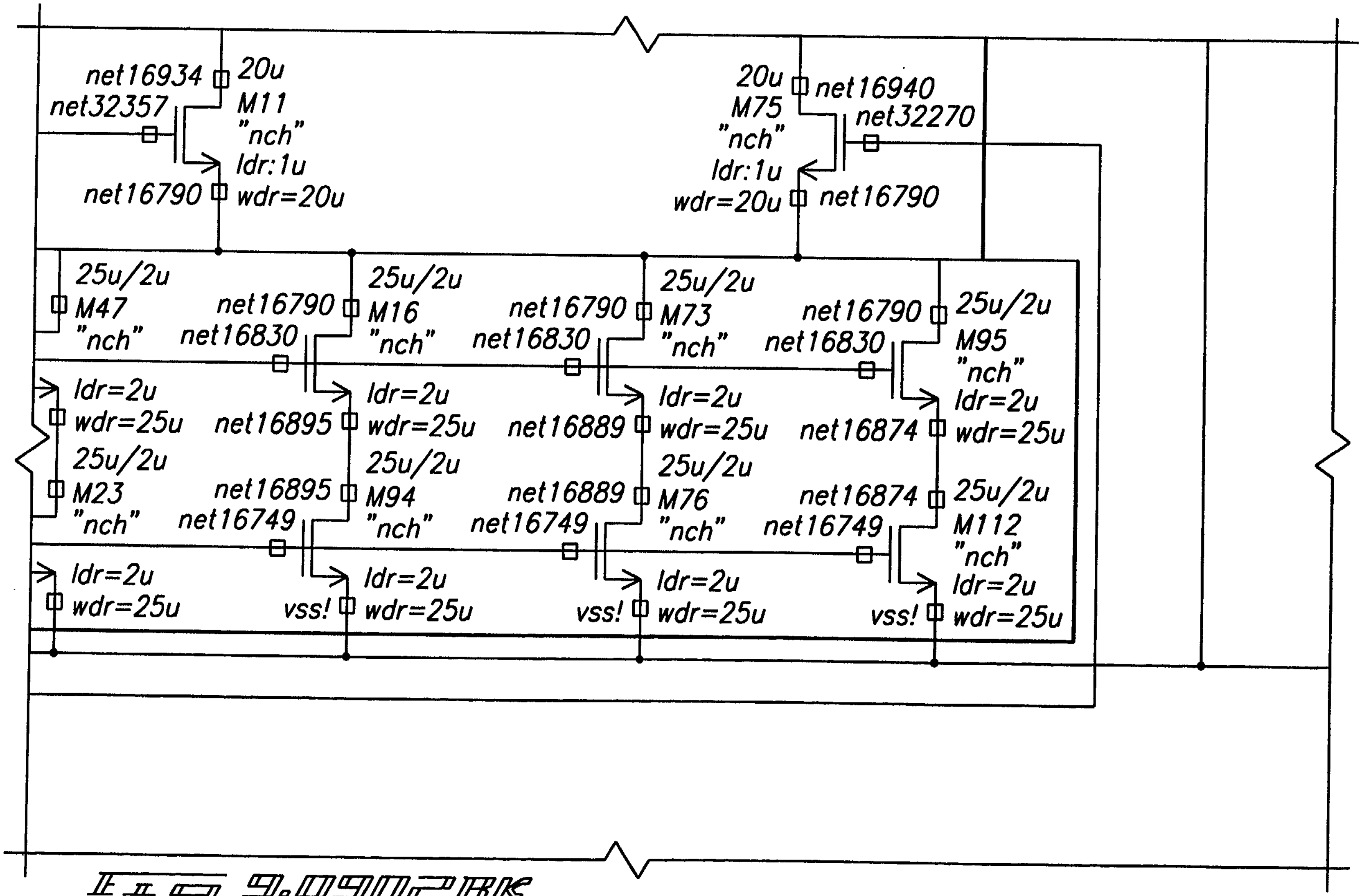
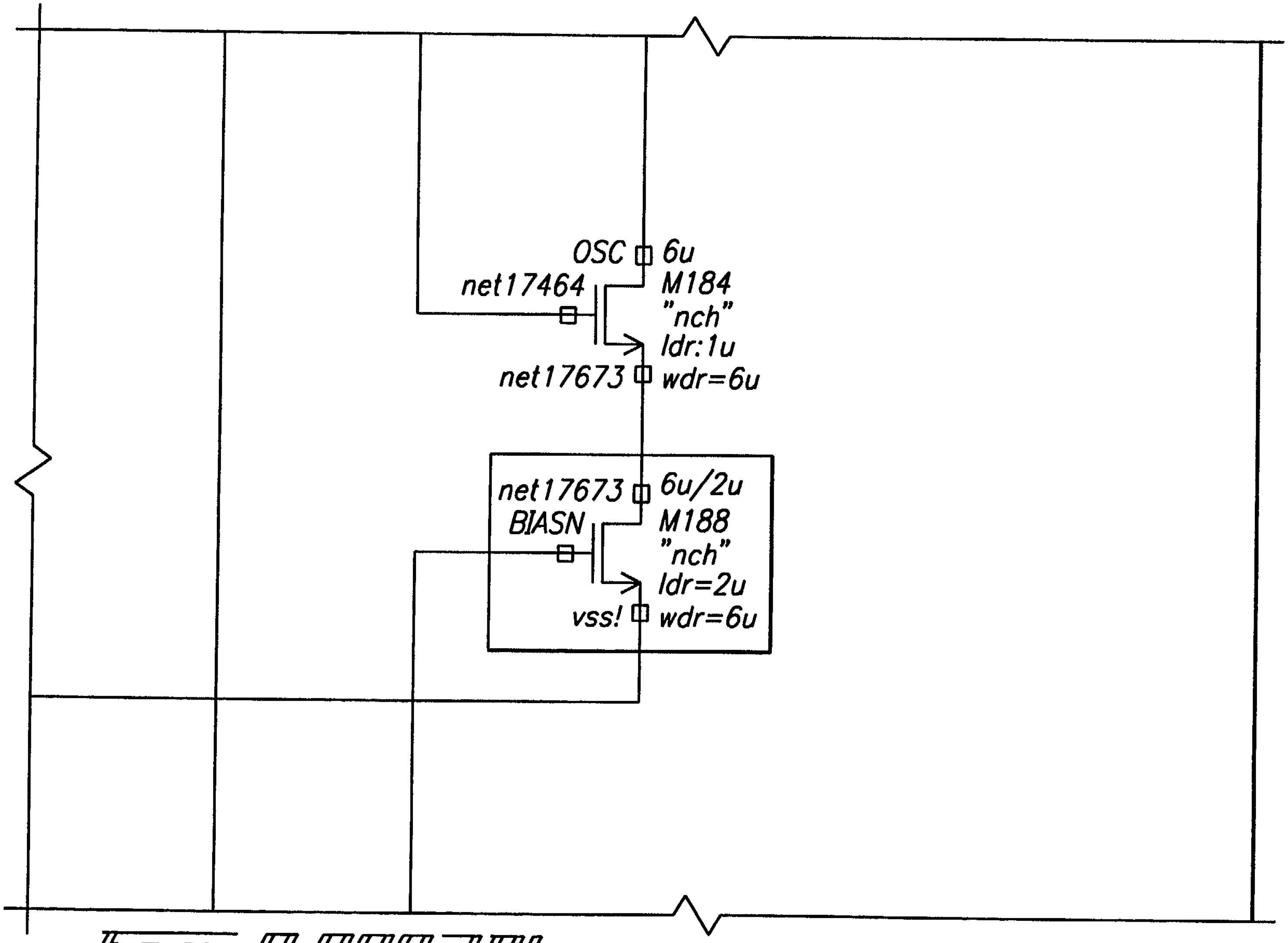

net16934
net32357
20u
M11
"nch"
ldr:1u
net16790
wdr=20u
20u
M75
"nch"
ldr:1u
wdr=20u
net16940
net32270
net16790
25u/2u
M47
"nch"
ldr=2u
wdr=25u
25u/2u
M23
"nch"
ldr=2u
wdr=25u
net16790
net16830
25u/2u
M16
"nch"
ldr=2u
net16895
wdr=25u
net16895
net16749
25u/2u
M94
"nch"
ldr=2u
vss!
wdr=25u
net16790
net16830
25u/2u
M73
"nch"
ldr=2u
net16889
wdr=25u
net16889
net16749
25u/2u
M76
"nch"
ldr=2u
vss!
wdr=25u
net16790
net16830
25u/2u
M95
"nch"
ldr=2u
net16874
wdr=25u
net16874
net16749
25u/2u
M112
"nch"
ldr=2u
vss!
wdr=25u

FIG 9.0902BK



OSC
6u
net17464
M184
"nch"
ldr:1u
net17673
wdr=6u
net17673
6u/2u
BIASN
M188
"nch"
ldr=2u
vss!
wdr=6u

Fig 9.0902BL

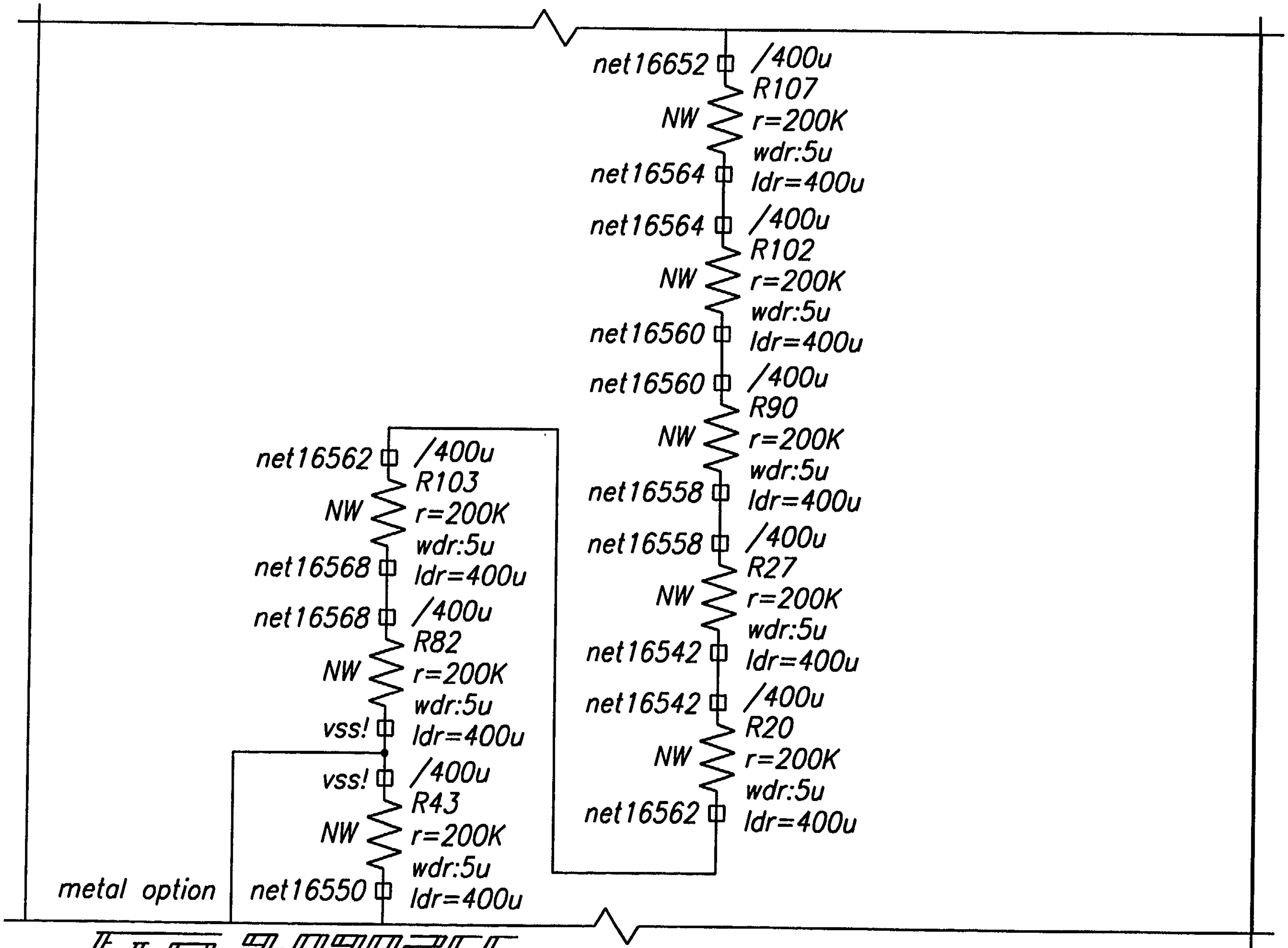

net16652
/400u
R107
NW
r=200K
wdr:5u
net16564
ldr=400u
net16564
/400u
R102
NW
r=200K
wdr:5u
net16560
ldr=400u
net16560
/400u
R90
NW
r=200K
wdr:5u
net16558
ldr=400u
net16558
/400u
R27
NW
r=200K
wdr:5u
net16542
ldr=400u
net16542
/400u
R20
NW
r=200K
wdr:5u
net16562
ldr=400u
net16562
/400u
R103
NW
r=200K
wdr:5u
net16568
ldr=400u
net16568
/400u
R82
NW
r=200K
wdr:5u
vss!
ldr=400u
vss!
/400u
R43
NW
r=200K
wdr:5u
metal option
net16550
ldr=400u

Fig 9.0902CC

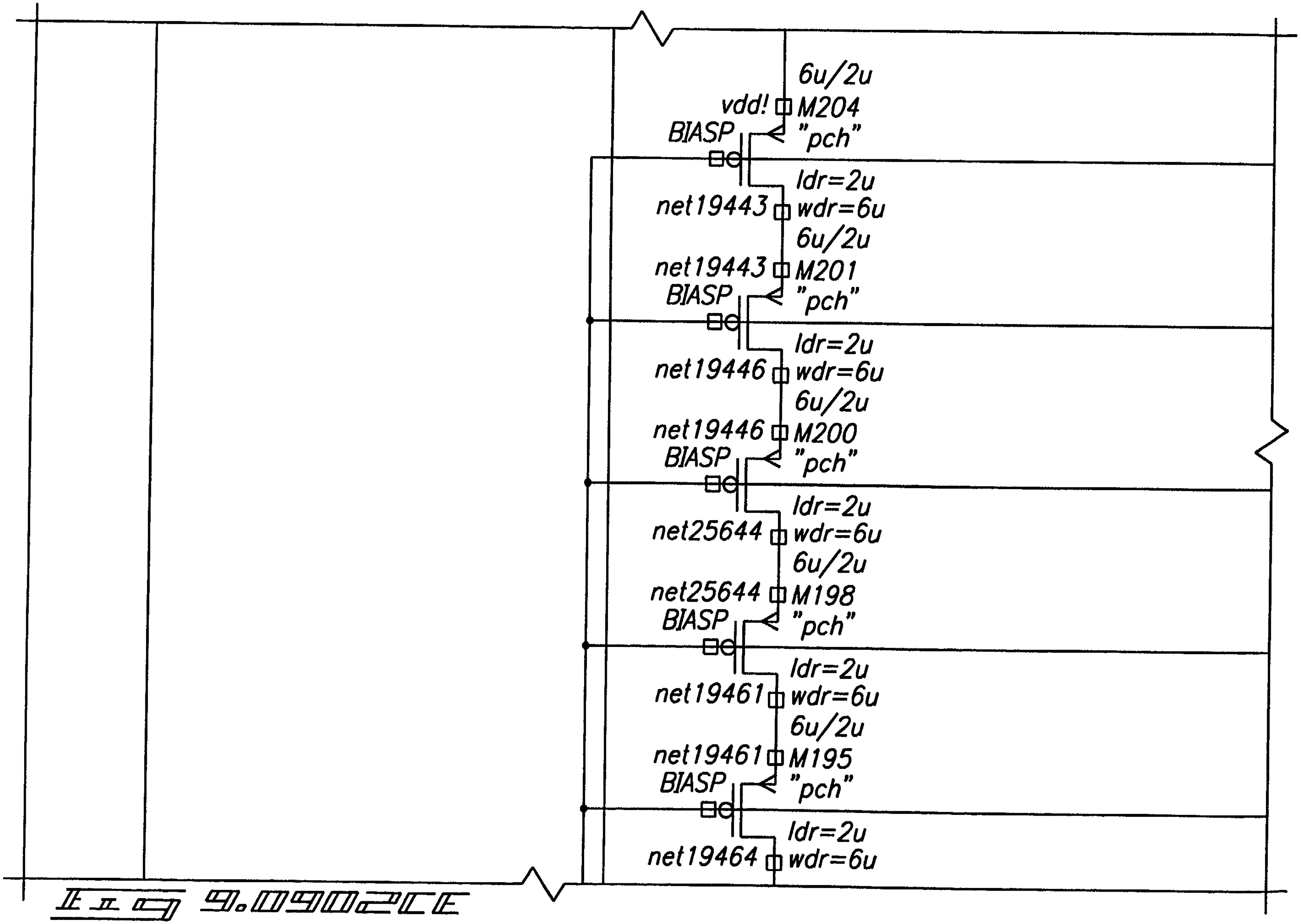

6u/2u
vdd!
M204
BIASP
"pch"
ldr=2u
net19443
wdr=6u
6u/2u
net19443
M201
BIASP
"pch"
ldr=2u
net19446
wdr=6u
6u/2u
net19446
M200
BIASP
"pch"
ldr=2u
net25644
wdr=6u
6u/2u
net25644
M198
BIASP
"pch"
ldr=2u
net19461
wdr=6u
6u/2u
net19461
M195
BIASP
"pch"
ldr=2u
net19464
wdr=6u

Fig 9.0902CE

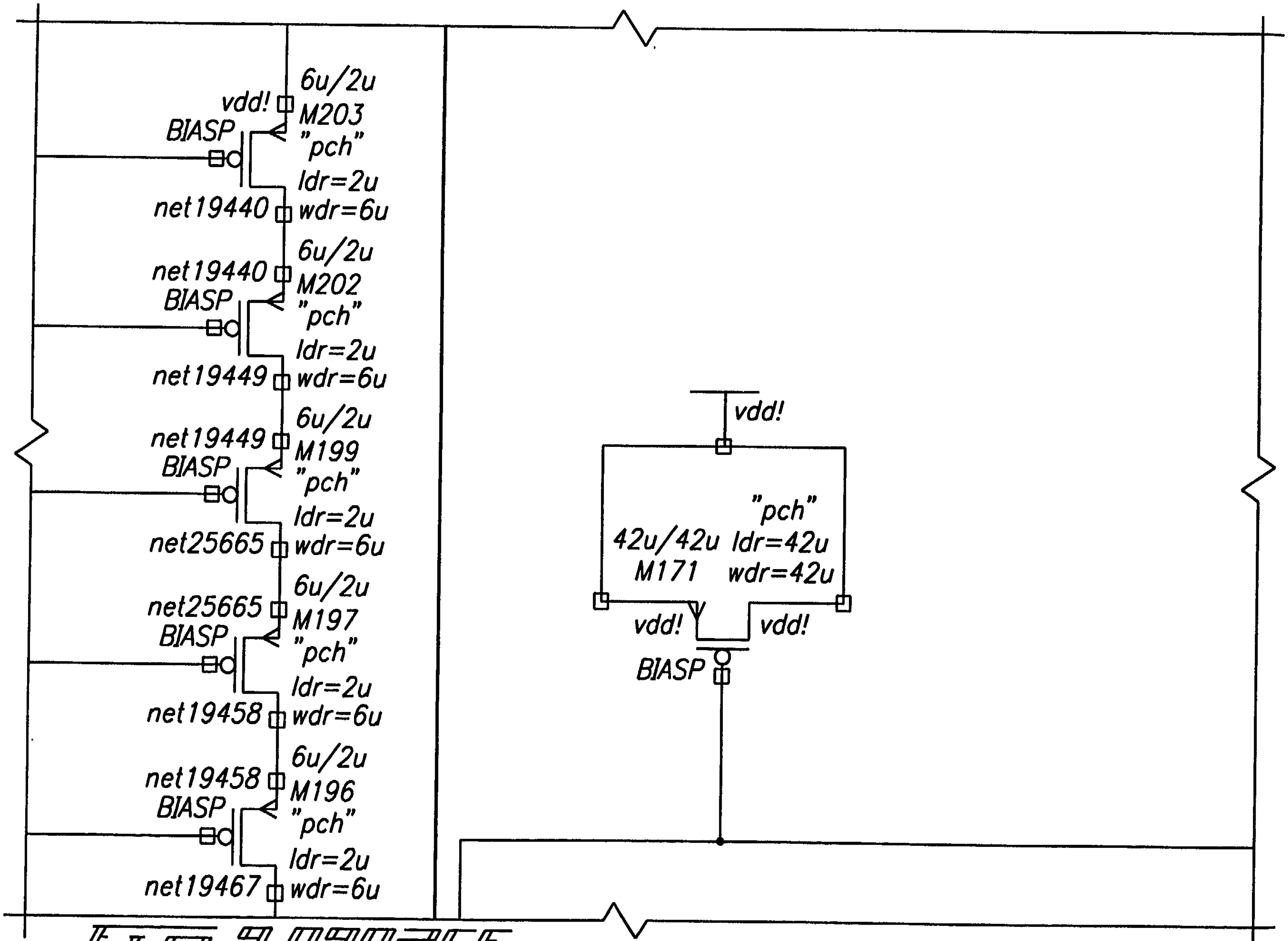

6u/2u
vdd!
M203
BIASP
"pch"
ldr=2u
net19440
wdr=6u
6u/2u
net19440
M202
BIASP
"pch"
ldr=2u
net19449
wdr=6u
6u/2u
net19449
M199
BIASP
"pch"
ldr=2u
net25665
wdr=6u
6u/2u
net25665
M197
BIASP
"pch"
ldr=2u
net19458
wdr=6u
6u/2u
net19458
M196
BIASP
"pch"
ldr=2u
net19467
wdr=6u
vdd!
"pch"
42u/42u
ldr=42u
M171
wdr=42u
vdd!
vdd!
BIASP

Fig 9.0902CF

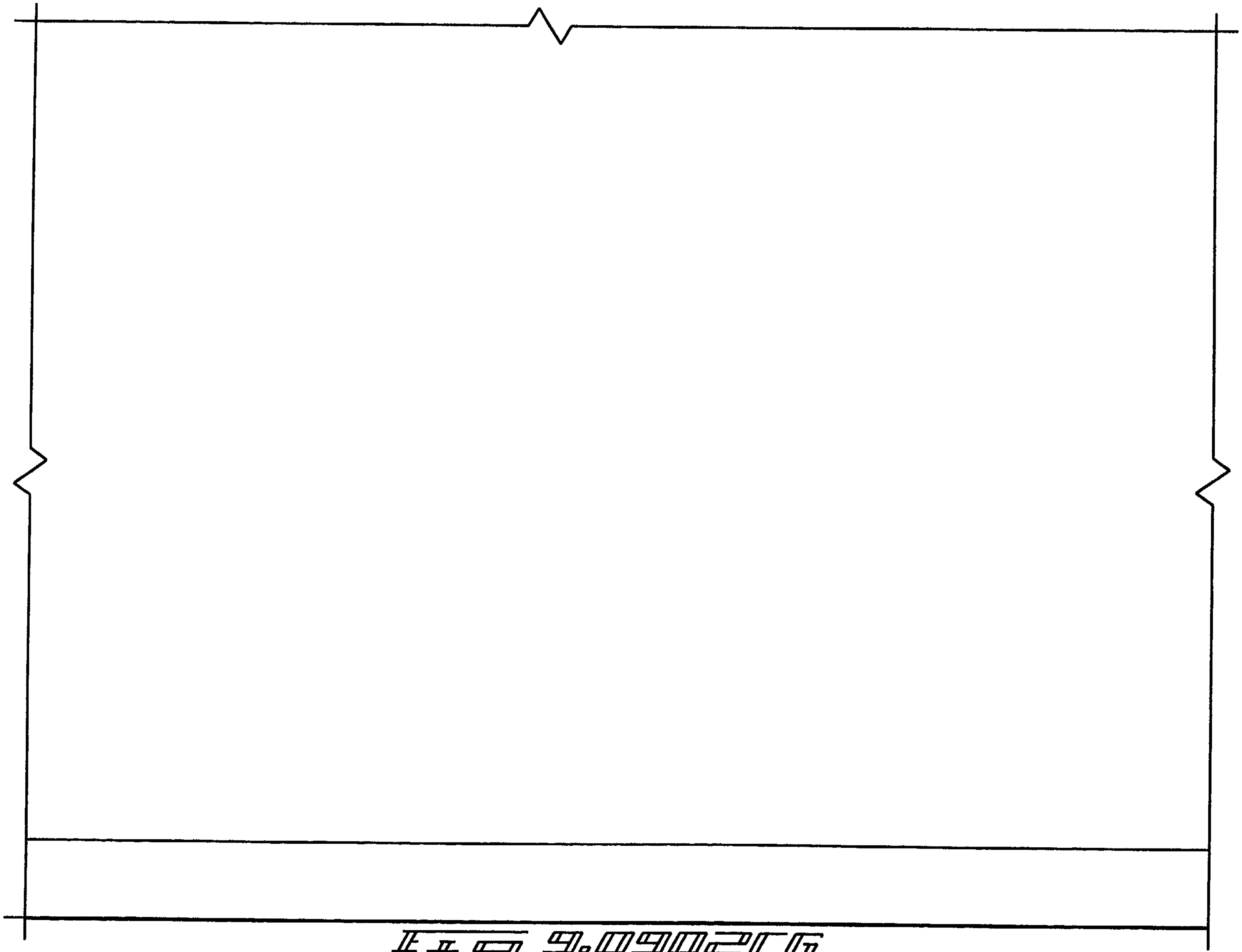


FIG 9.0902CG

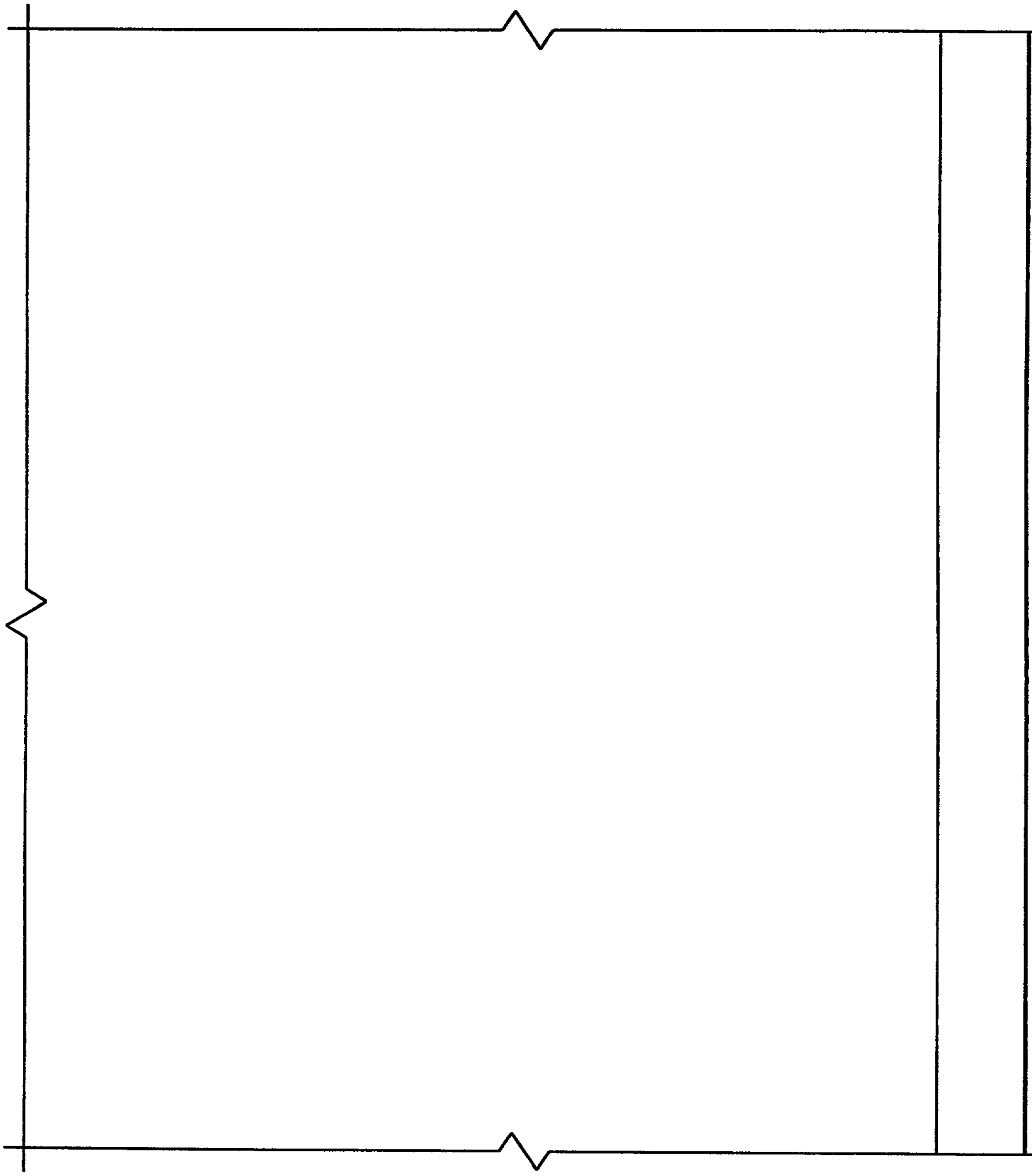


FIG. 9.0902CH

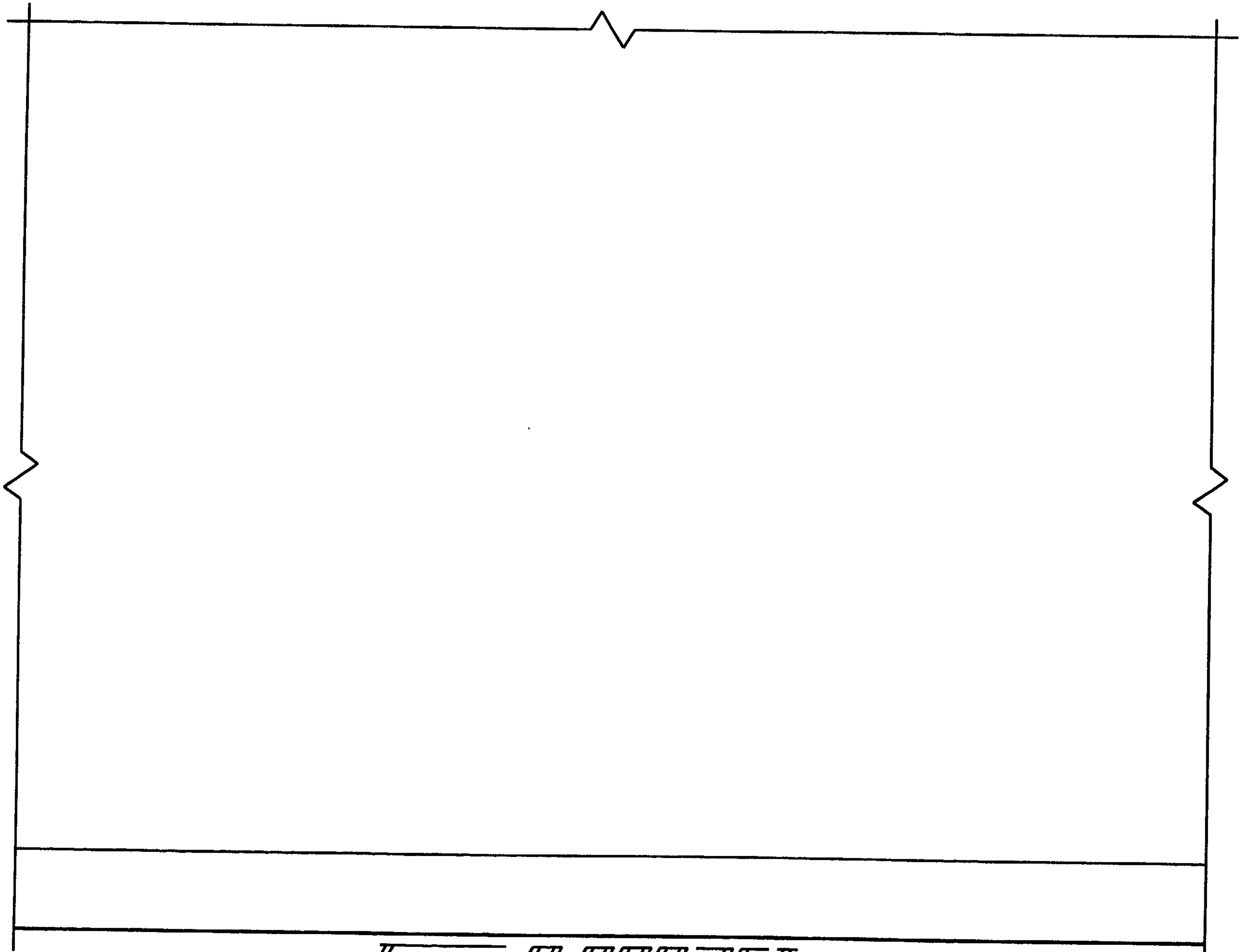


Fig 9.0902CI

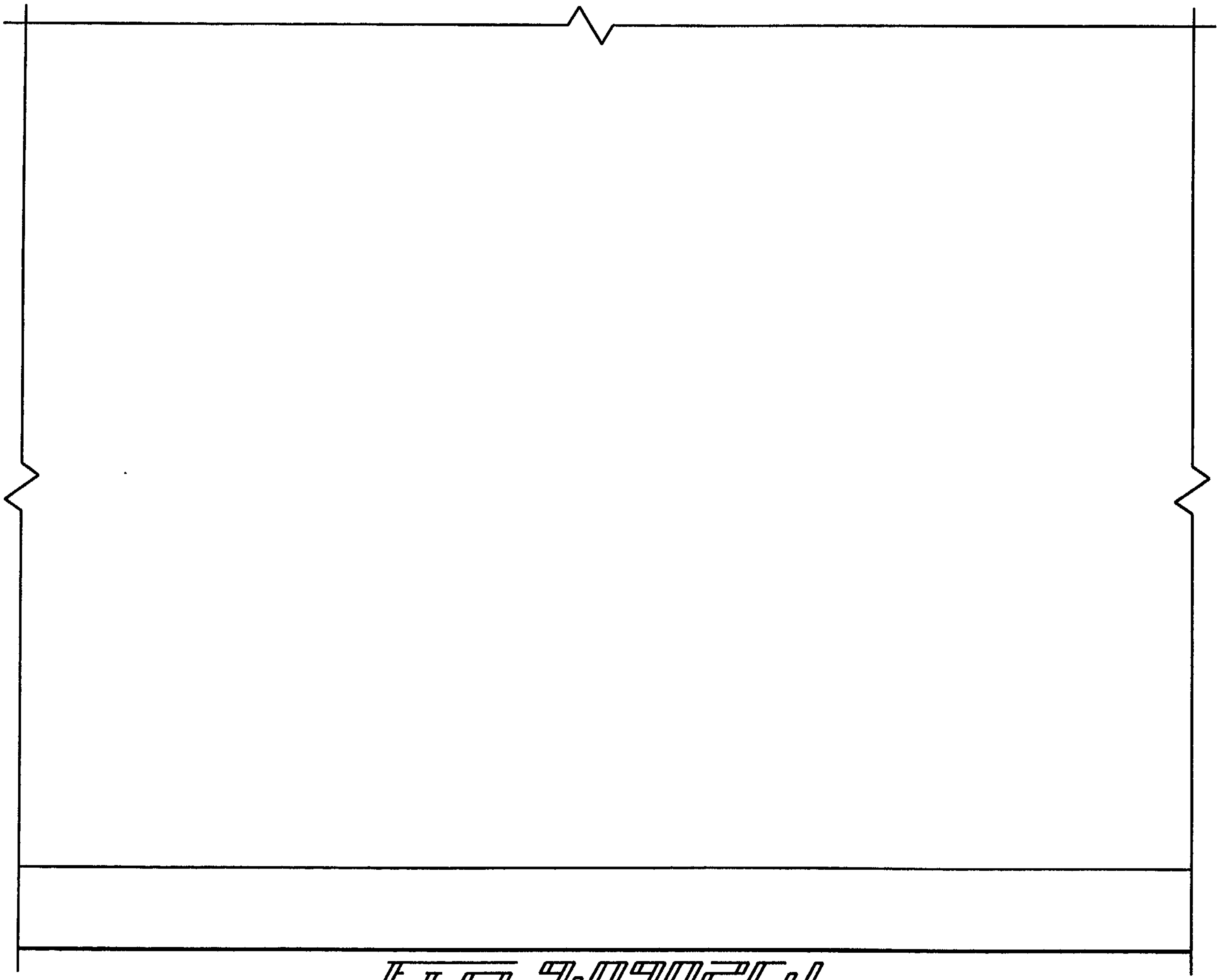


Fig 9.0902Ci

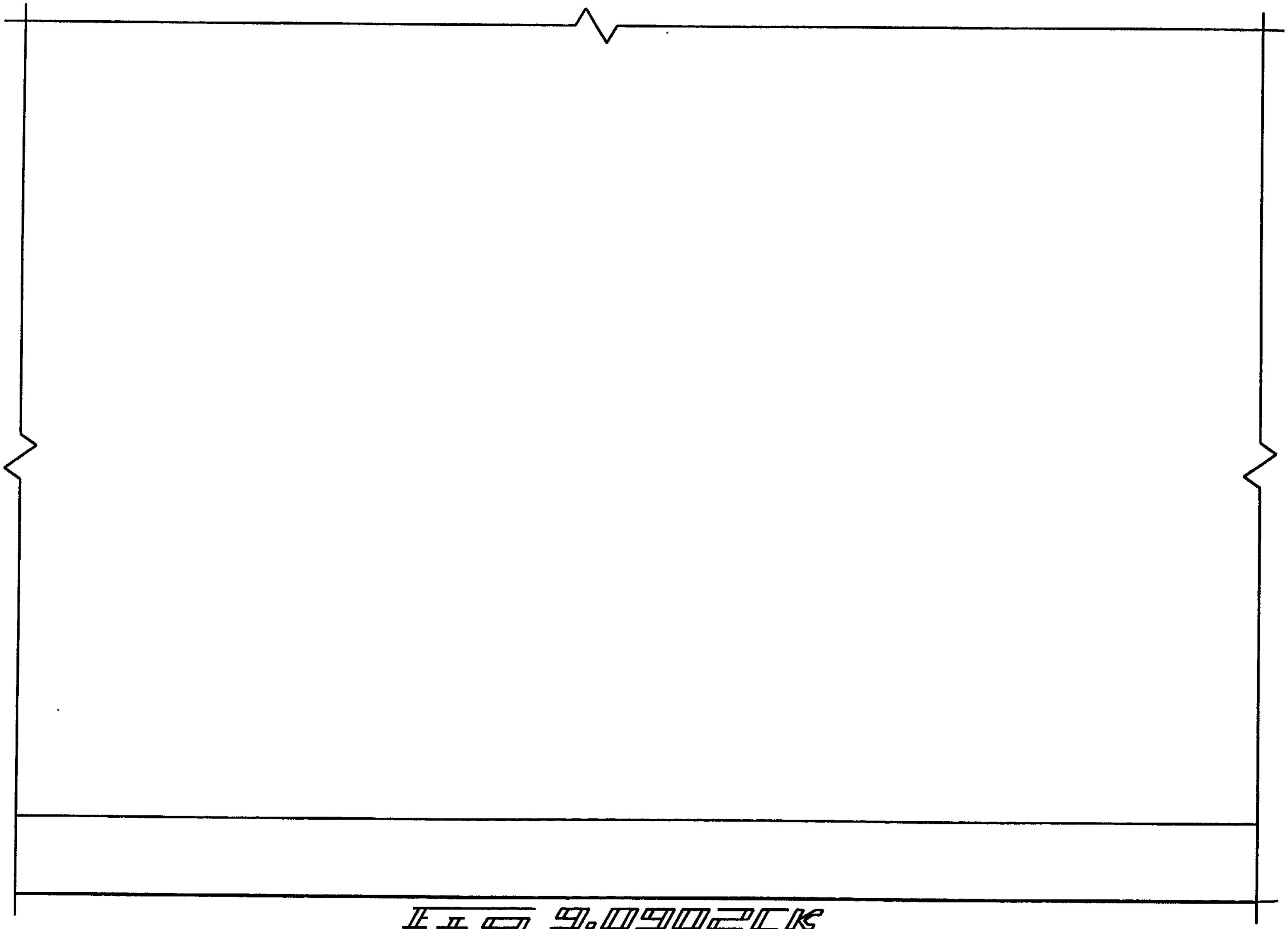


Fig 9.0902CK

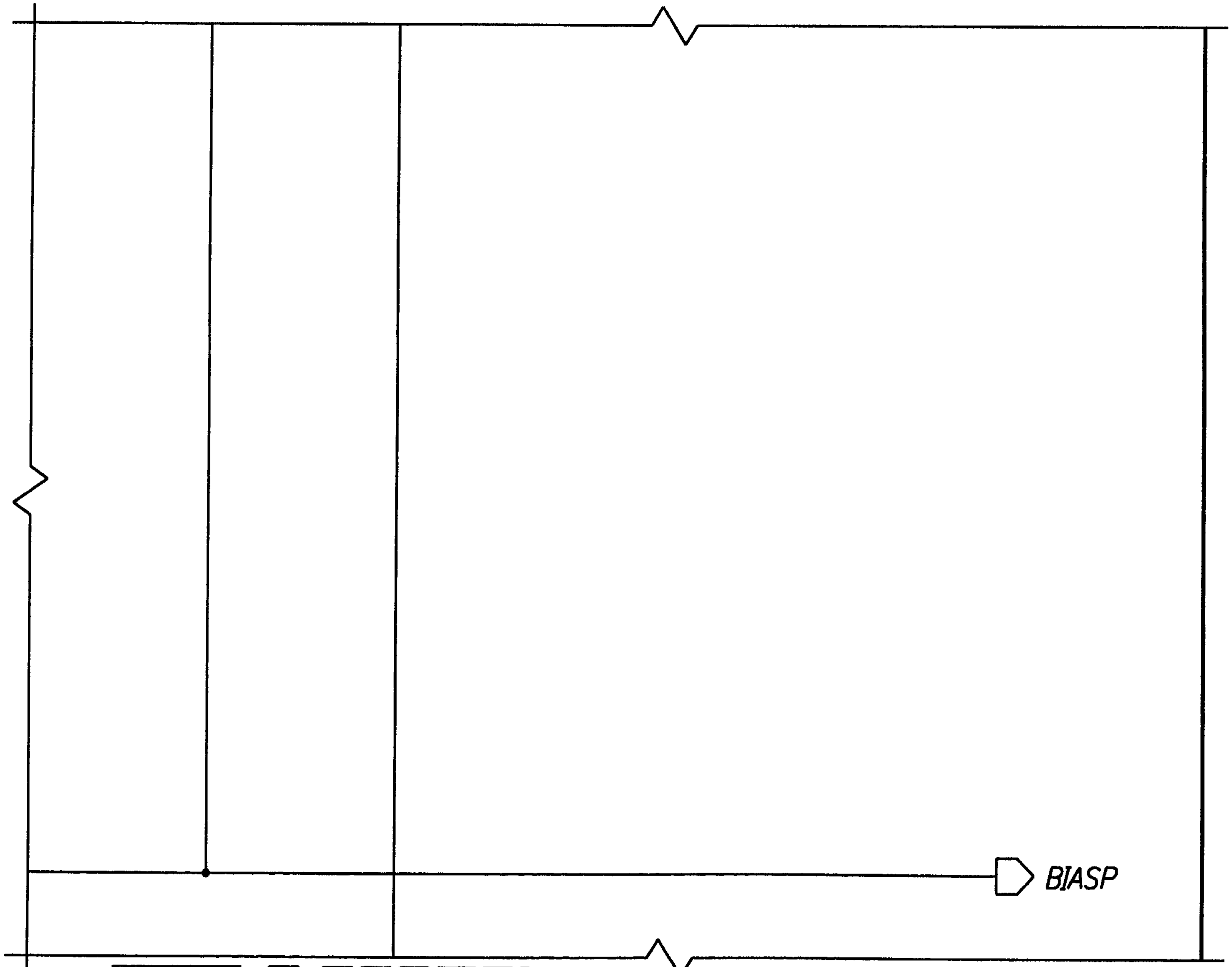


Fig 9.0902CL

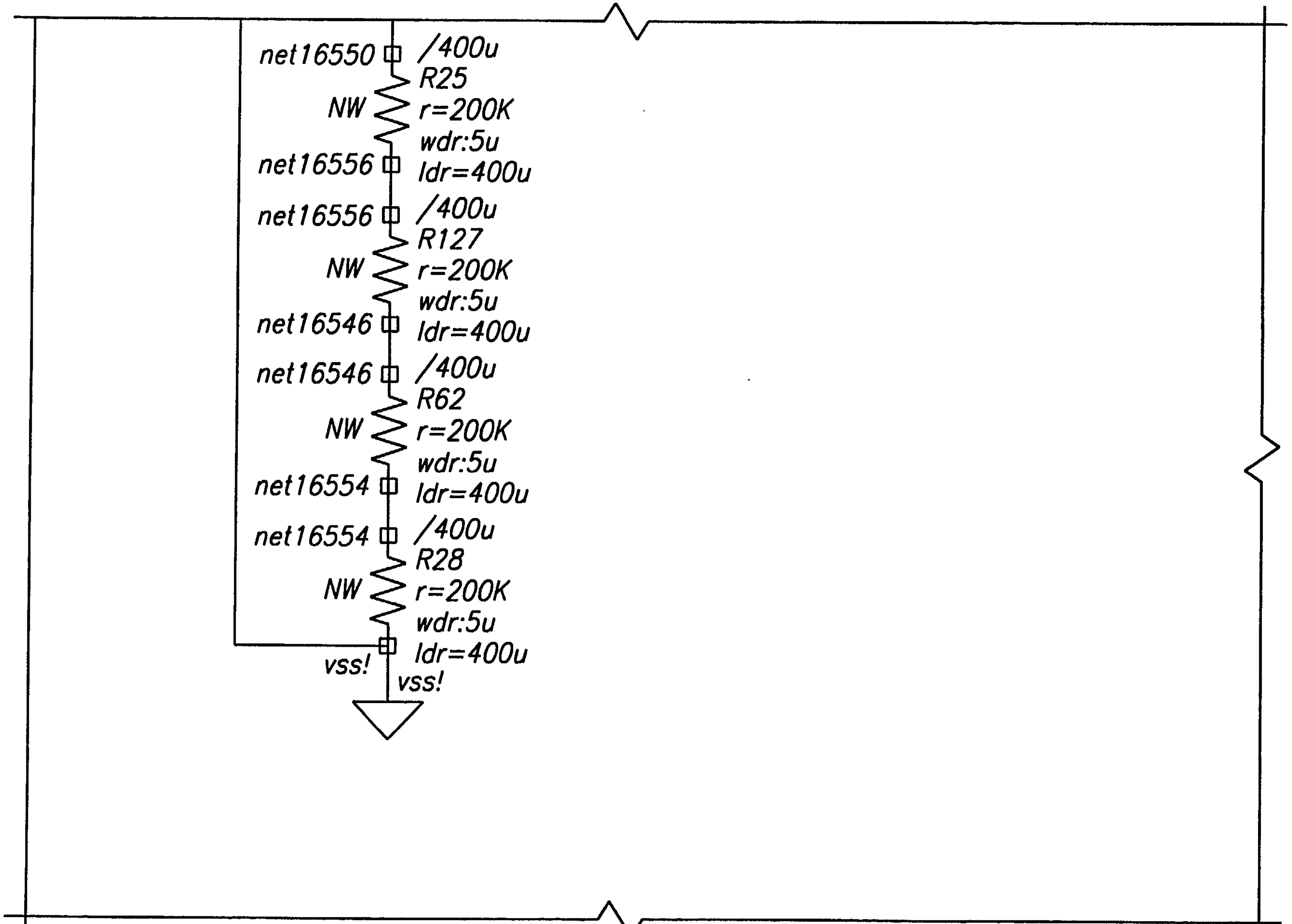

net16550
/400u
R25
NW
r=200K
wdr:5u
net16556
ldr=400u
net16556
/400u
R127
NW
r=200K
wdr:5u
net16546
ldr=400u
net16546
/400u
R62
NW
r=200K
wdr:5u
net16554
ldr=400u
net16554
/400u
R28
NW
r=200K
wdr:5u
ldr=400u
vss!
vss!

Fig 9.0902DC

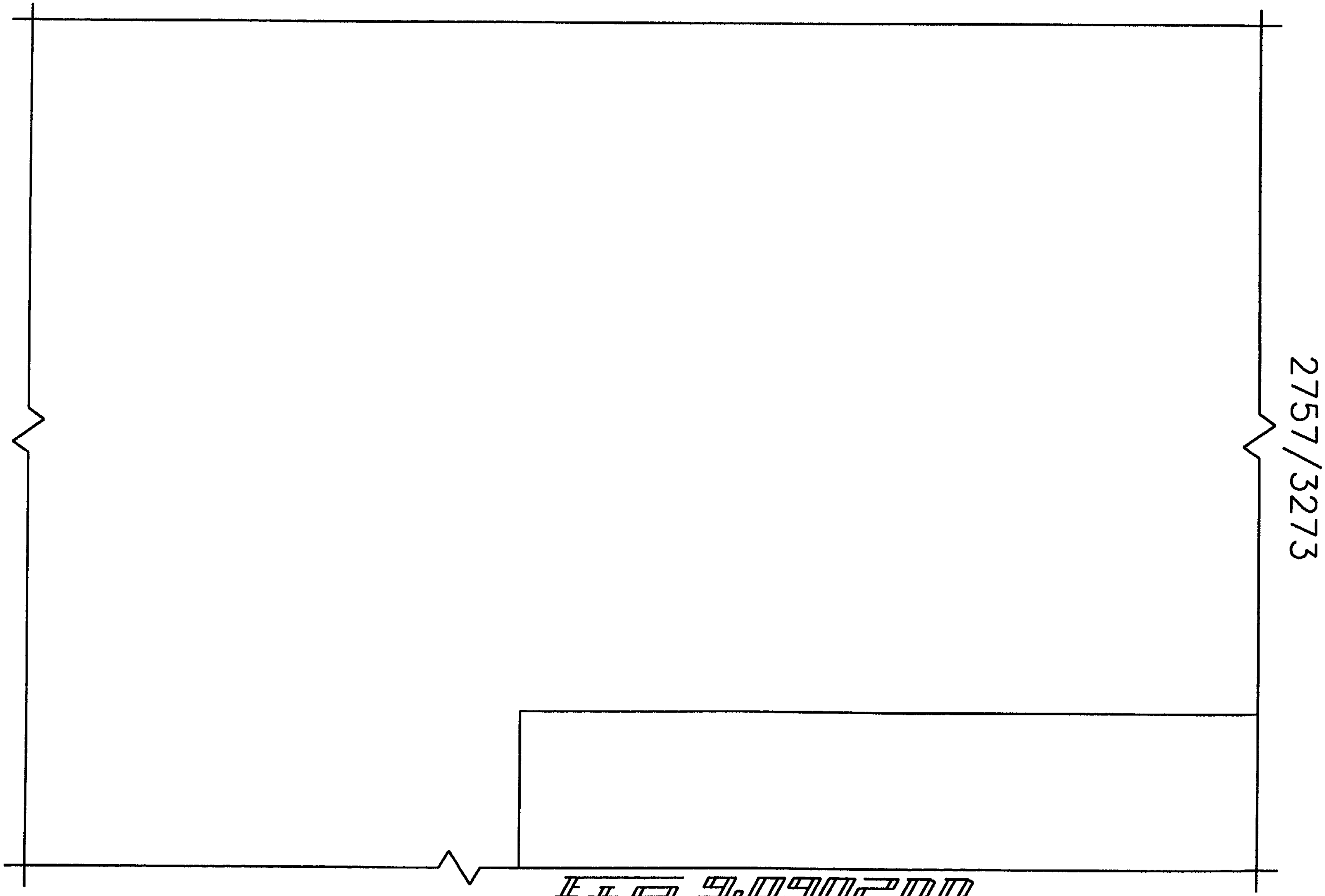


Fig 9.0902DD

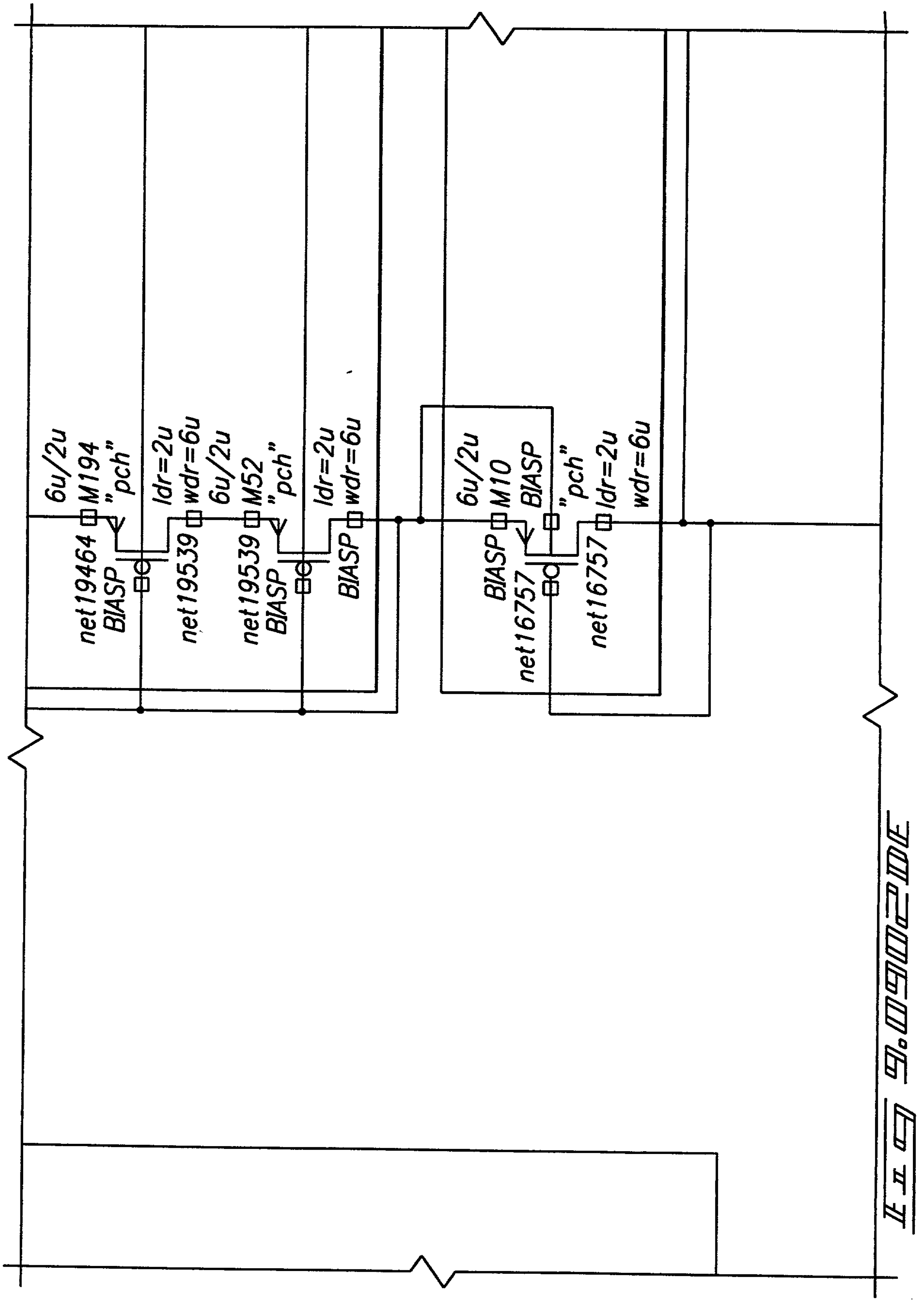

6u/2u
M194
"pch"
ldr=2u
wdr=6u
net19464
BIASP
net19539
6u/2u
M52
"pch"
ldr=2u
wdr=6u
net19539
BIASP
BIASP
6u/2u
M10
BIASP
"pch"
ldr=2u
wdr=6u
BIASP
net16757
net16757

FIG 9.0902DE

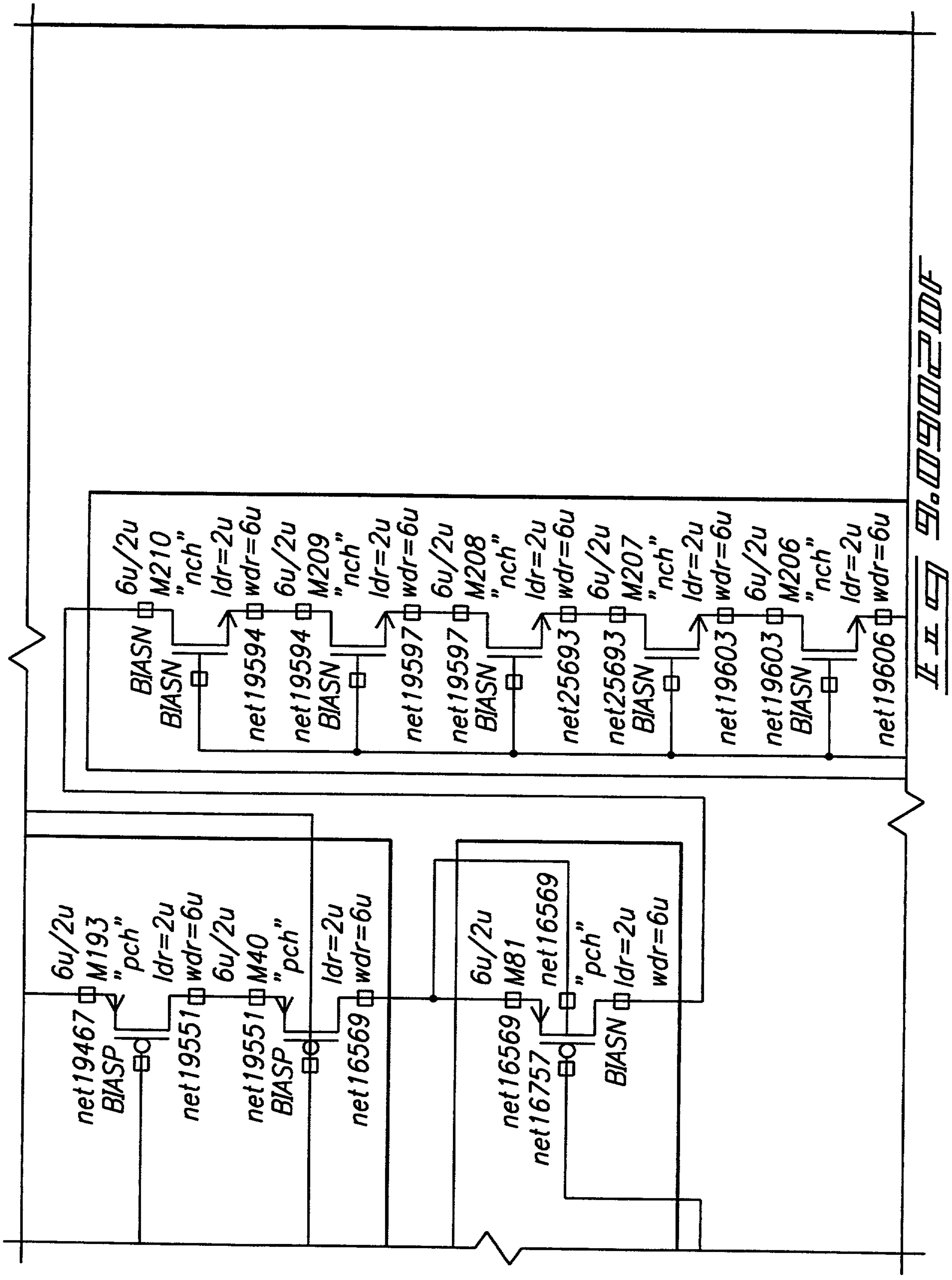

6u/2u
M210
"nch"
ldr=2u
wdr=6u
BIASN
BIASN
net19594
6u/2u
M209
"nch"
ldr=2u
wdr=6u
net19594
BIASN
net19597
6u/2u
M208
"nch"
ldr=2u
wdr=6u
net19597
BIASN
net25693
6u/2u
M207
"nch"
ldr=2u
wdr=6u
net25693
BIASN
net19603
6u/2u
M206
"nch"
ldr=2u
wdr=6u
net19603
BIASN
net19606
6u/2u
M193
"pch"
ldr=2u
wdr=6u
net19467
BIASP
net19551
6u/2u
M40
"pch"
ldr=2u
wdr=6u
net19551
BIASP
net16569
6u/2u
M81
net16569
"pch"
ldr=2u
wdr=6u
net16569
net16757
BIASN

Fig 9.0902DF

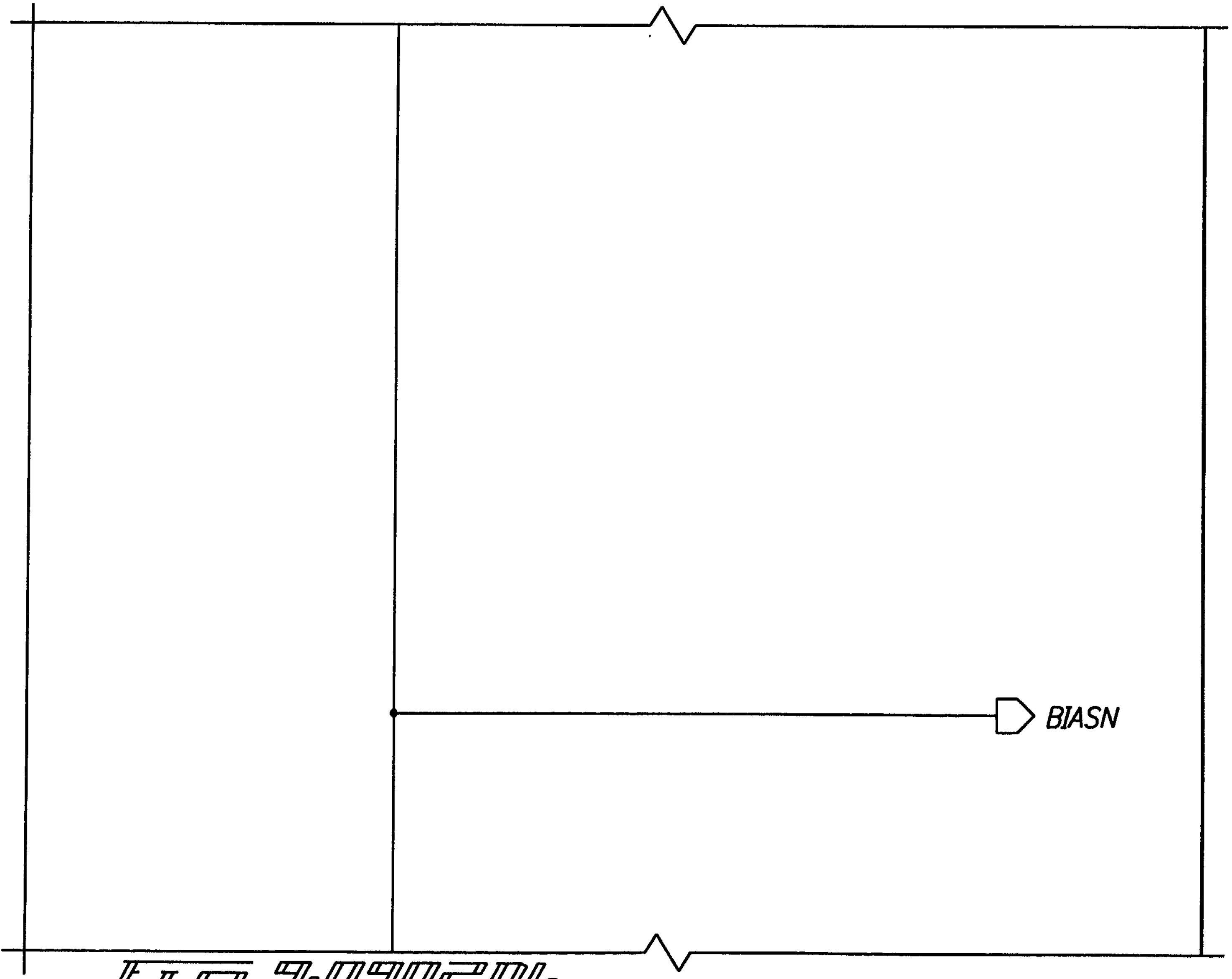


Fig 9.0902DL

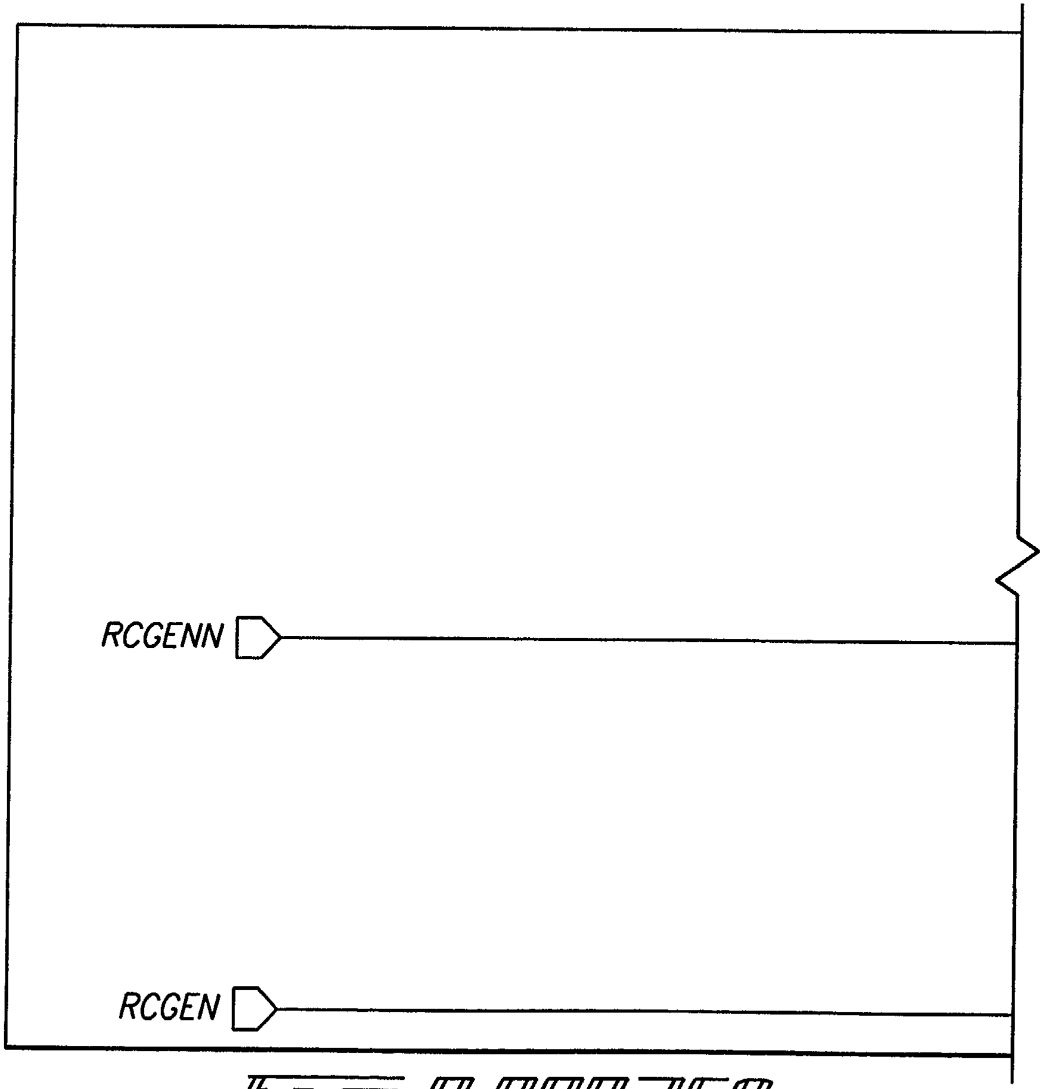


Fig 9.0902EA

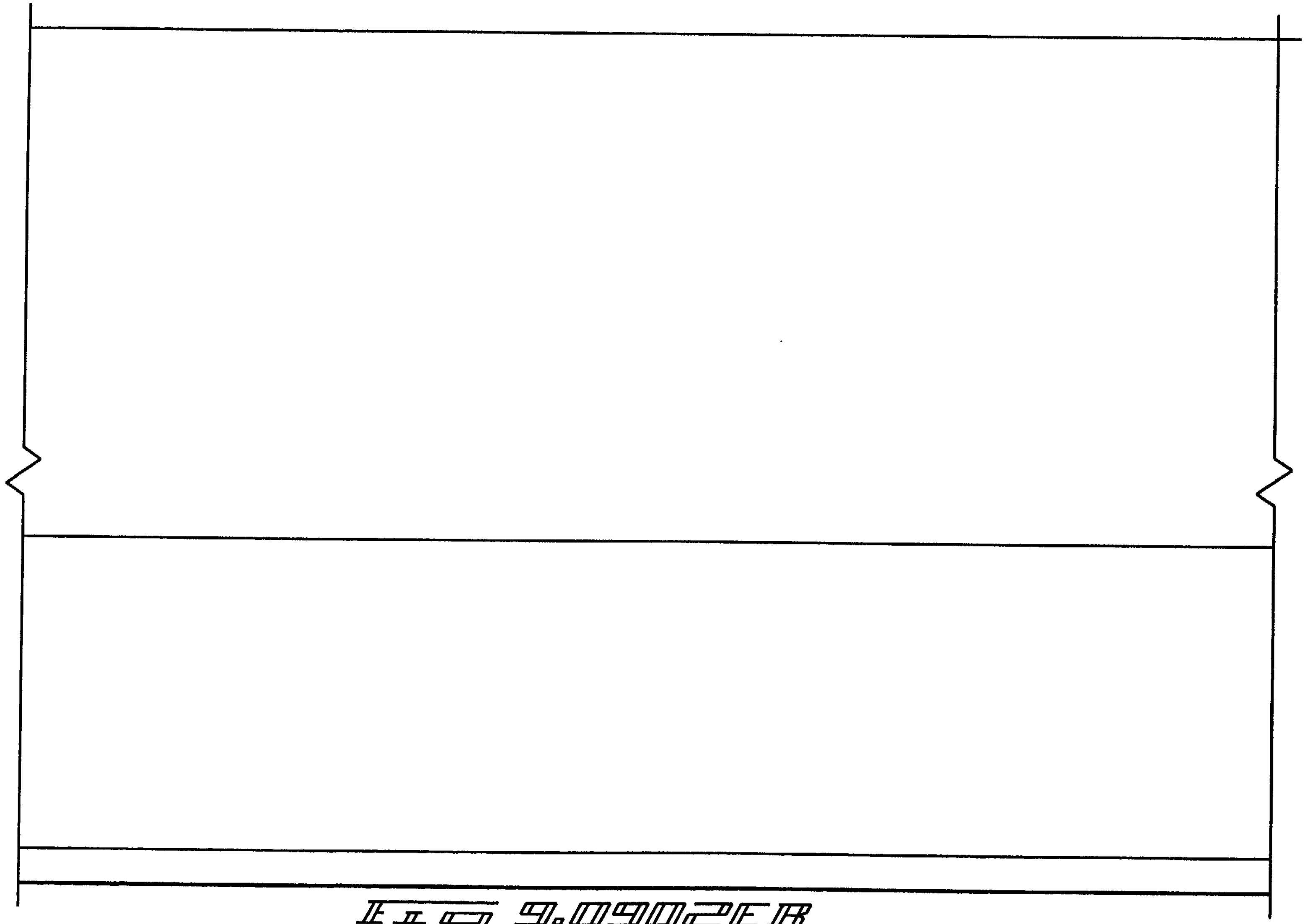


Fig 9.0902EB

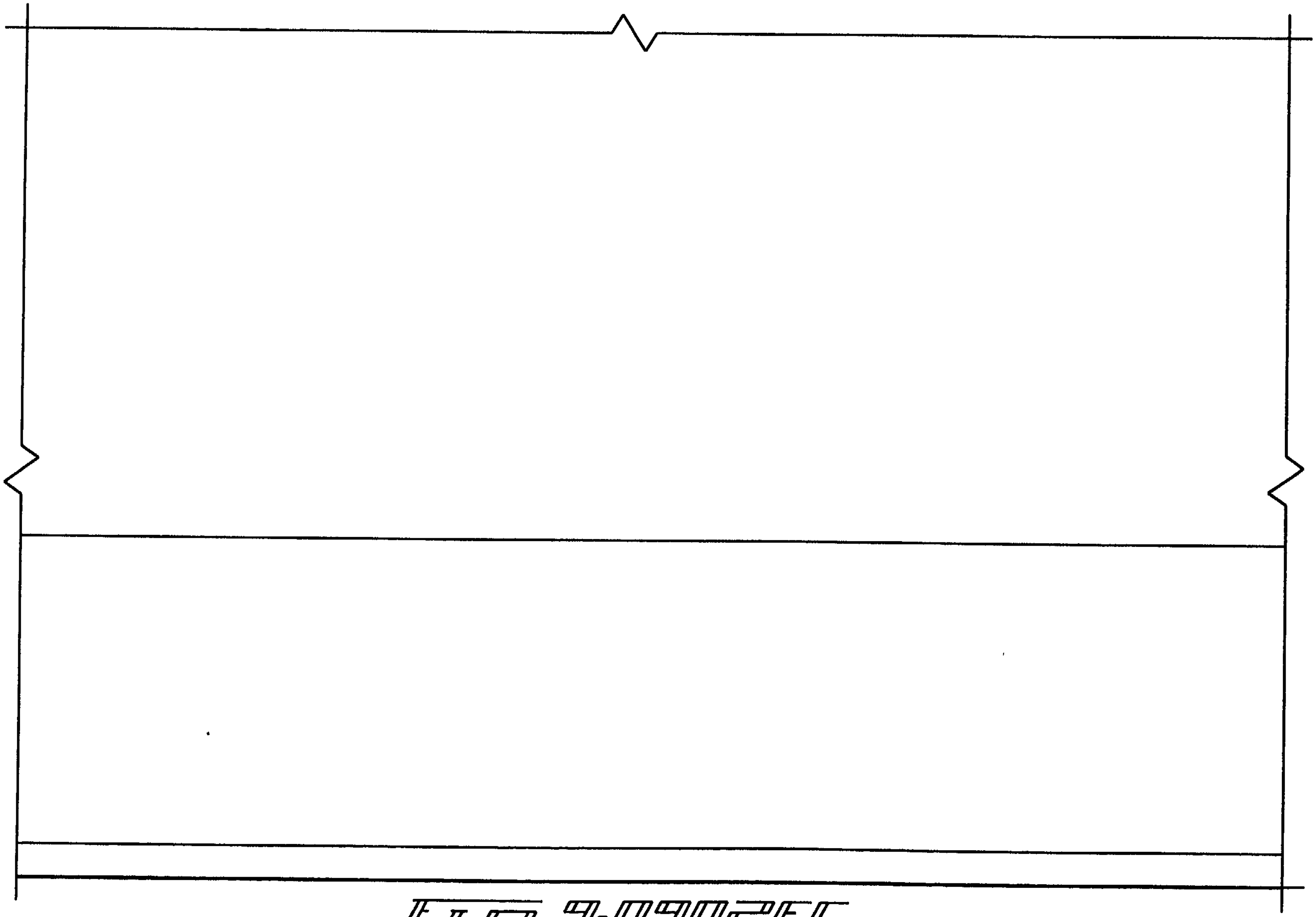


Fig 9.0902EC

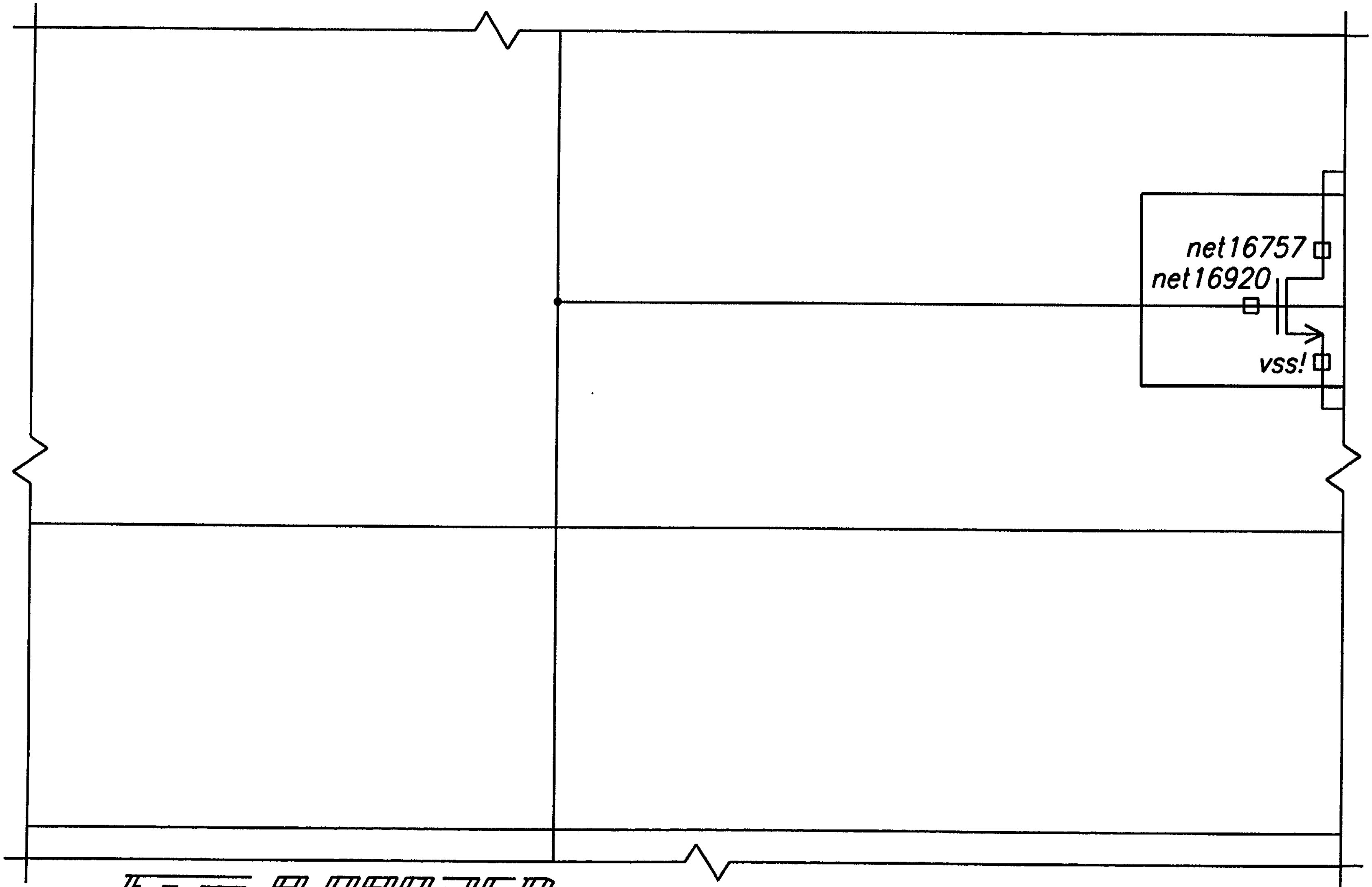


FIG 9.0902ED

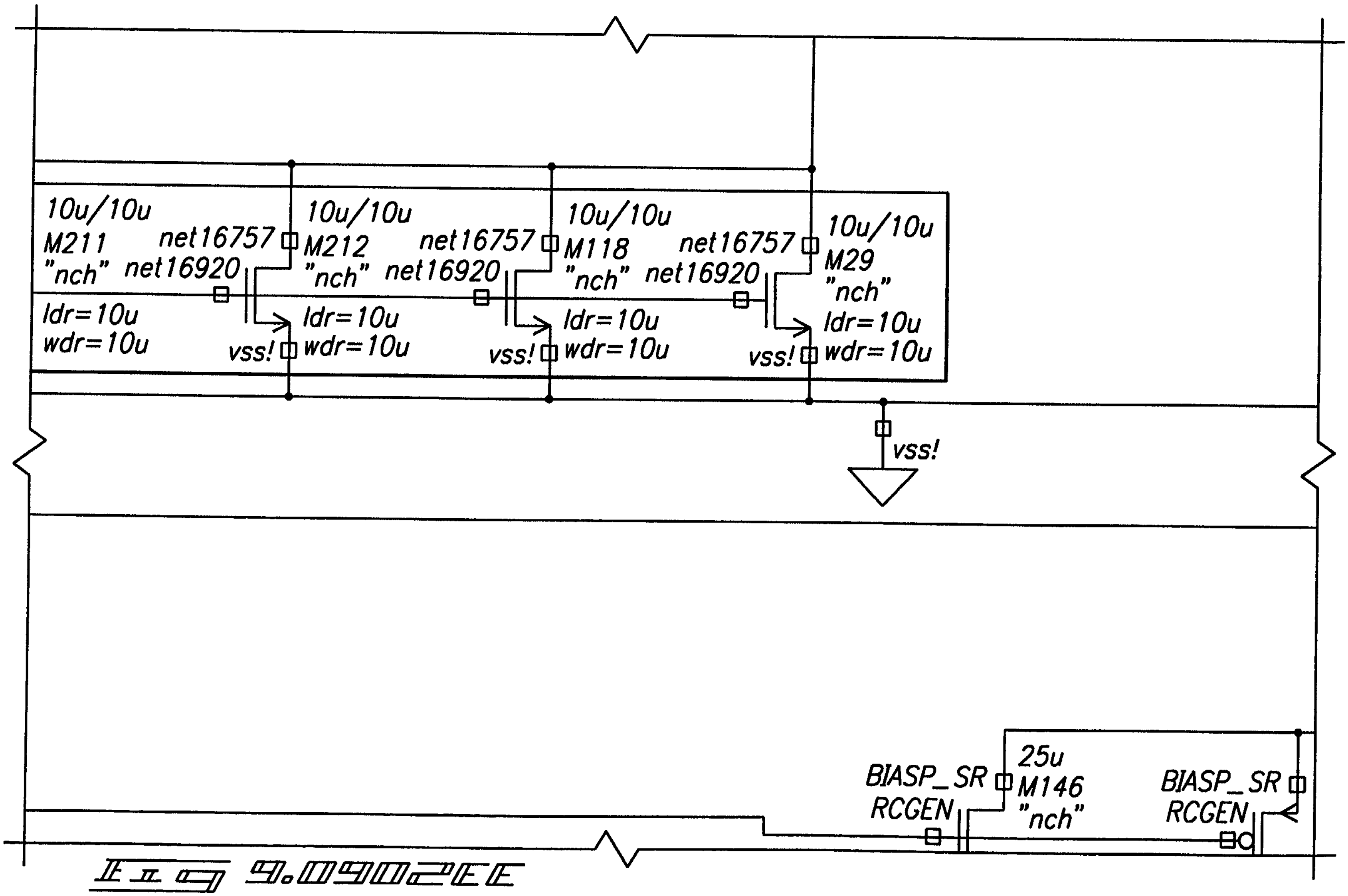

10u/10u
M211
"nch"
net16757
net16920
ldr=10u
wdr=10u
vss!
10u/10u
M212
"nch"
net16757
net16920
ldr=10u
wdr=10u
vss!
10u/10u
M118
"nch"
net16757
net16920
ldr=10u
wdr=10u
vss!
10u/10u
M29
"nch"
net16757
net16920
ldr=10u
wdr=10u
vss!
vss!
BIASP_SR
RCGEN
25u
M146
"nch"
BIASP_SR
RCGEN

Fig 9.0902EE

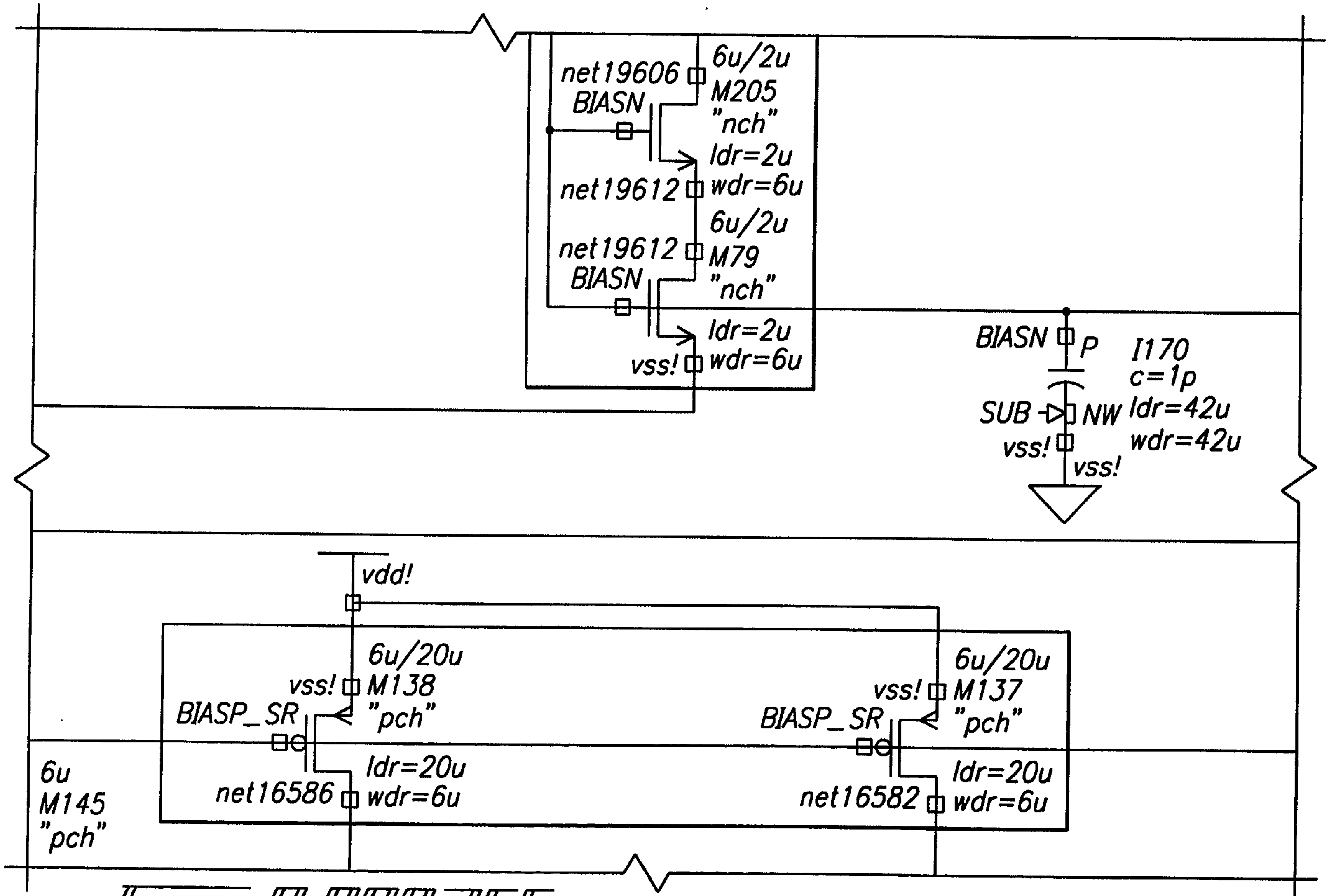

net19606
6u/2u
M205
"nch"
BIASN
ldr=2u
net19612
wdr=6u
6u/2u
net19612
M79
"nch"
BIASN
ldr=2u
vss!
wdr=6u
BIASN
P
I170
c=1p
SUB
NW
ldr=42u
vss!
wdr=42u
vss!
vdd!
6u/20u
vss!
M138
BIASP_SR
"pch"
ldr=20u
net16586
wdr=6u
6u/20u
vss!
M137
BIASP_SR
"pch"
ldr=20u
net16582
wdr=6u
6u
M145
"pch"

Fig 9.090.2EF

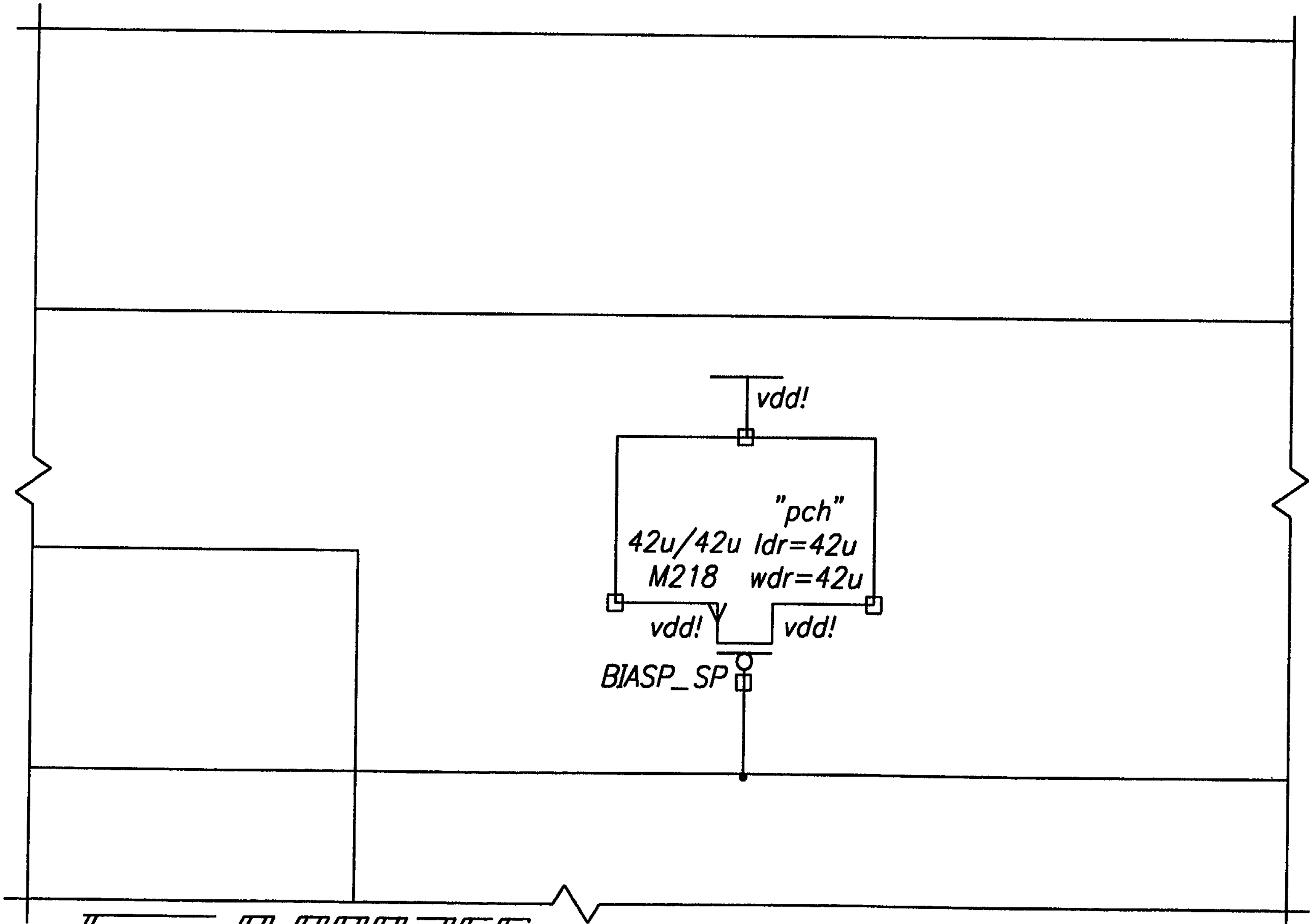


Fig 9.0902EG

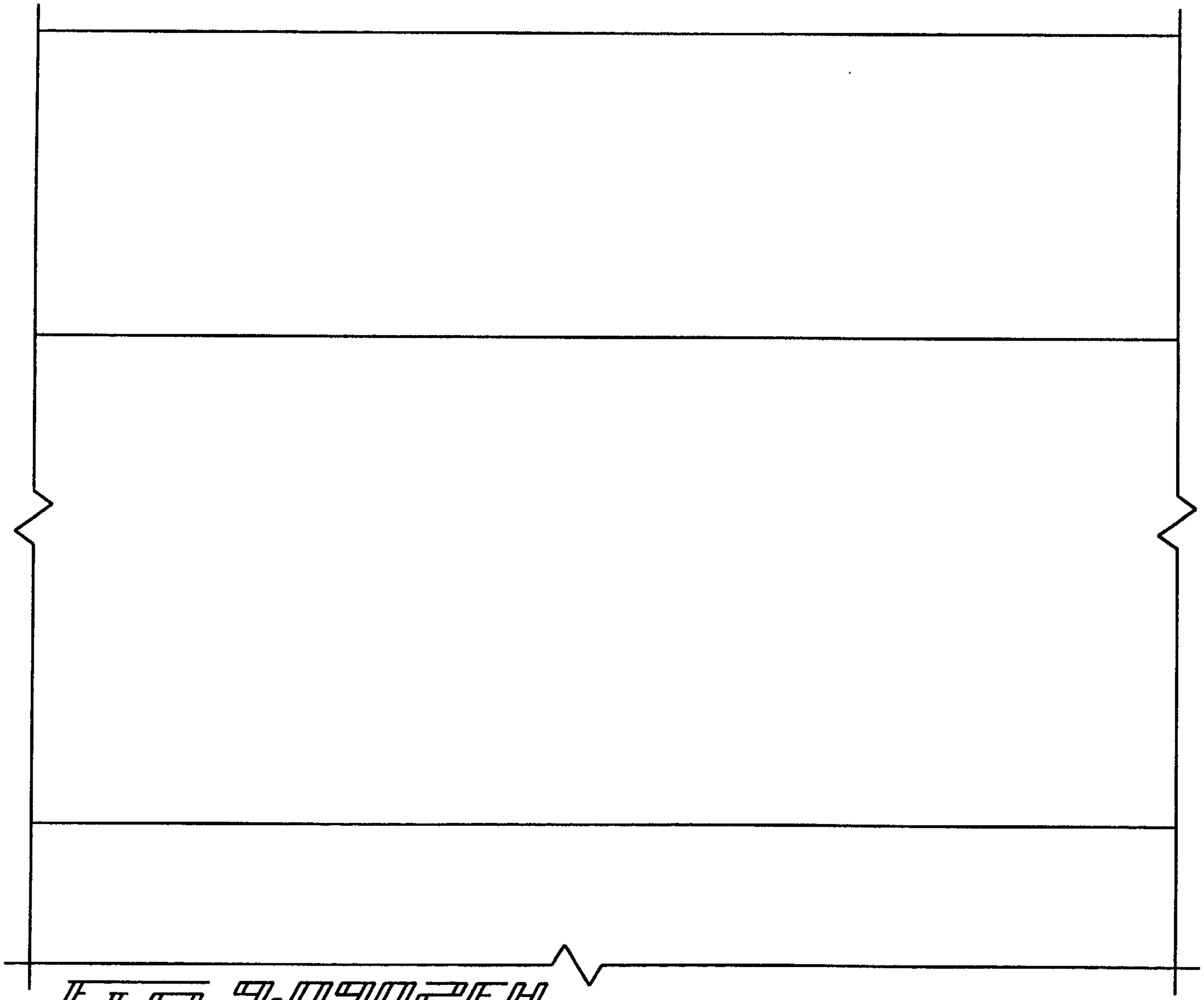


Fig 9.0902EH

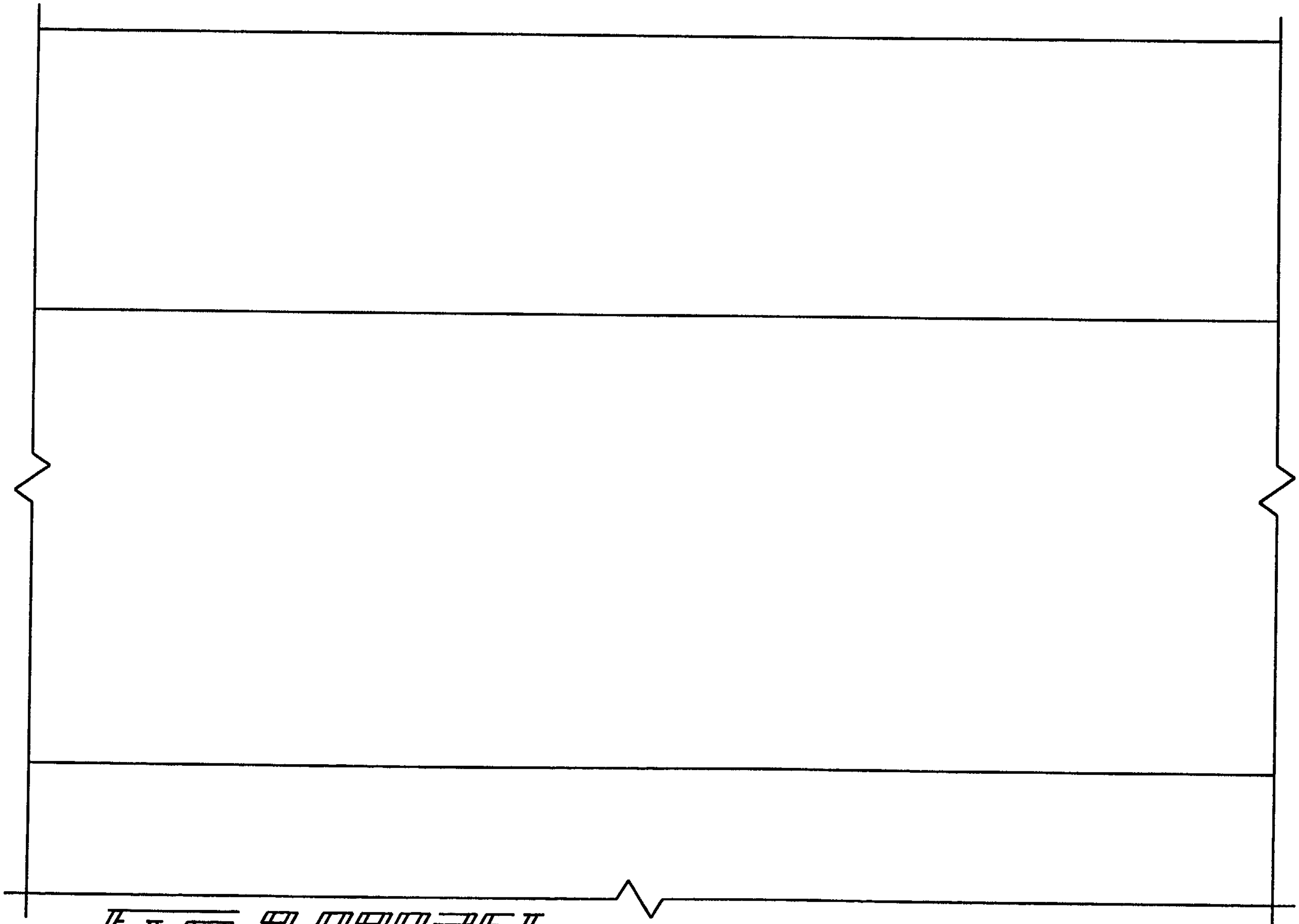


FIG 9.0902EI

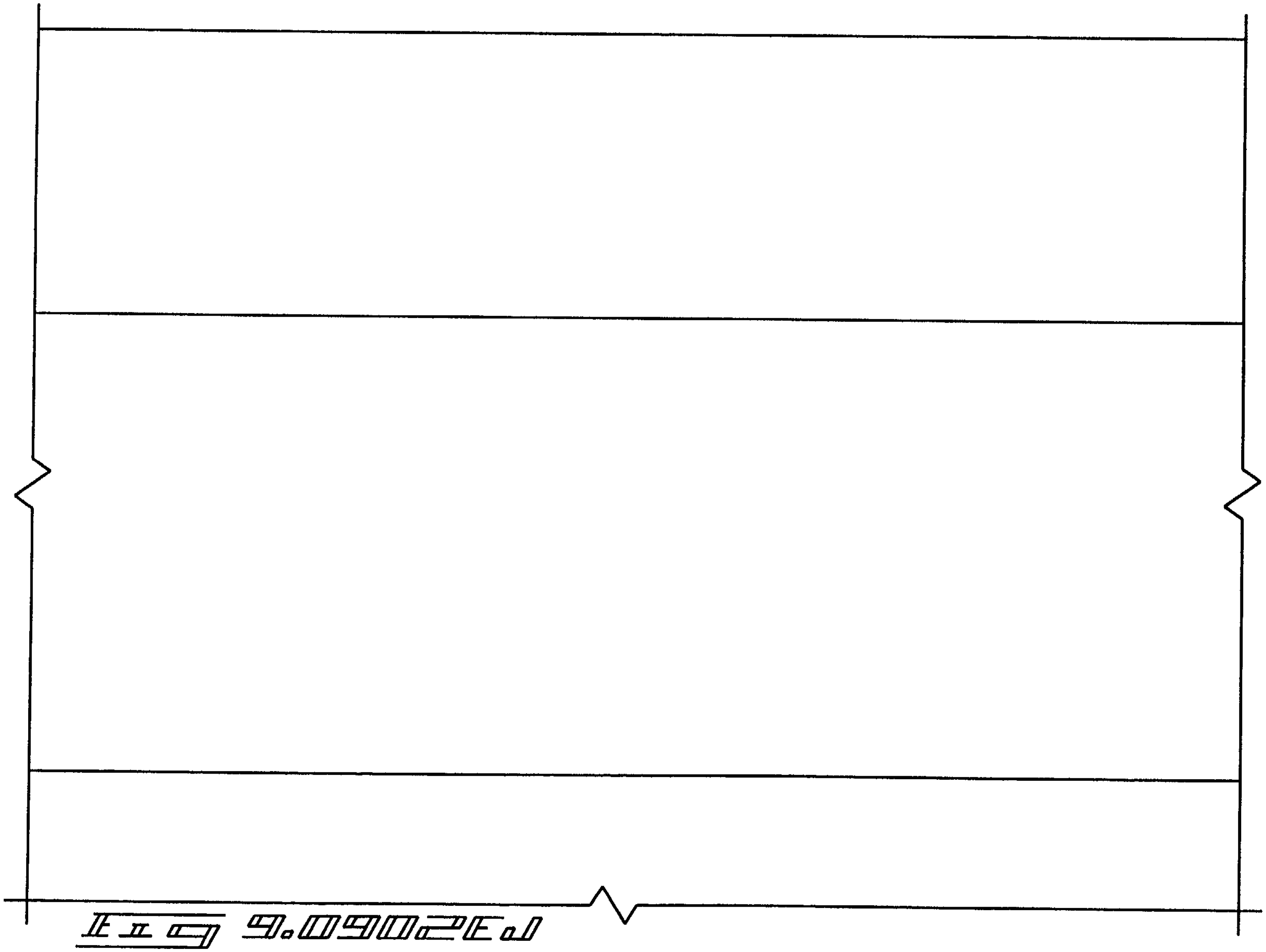


FIG 9.0902E.1

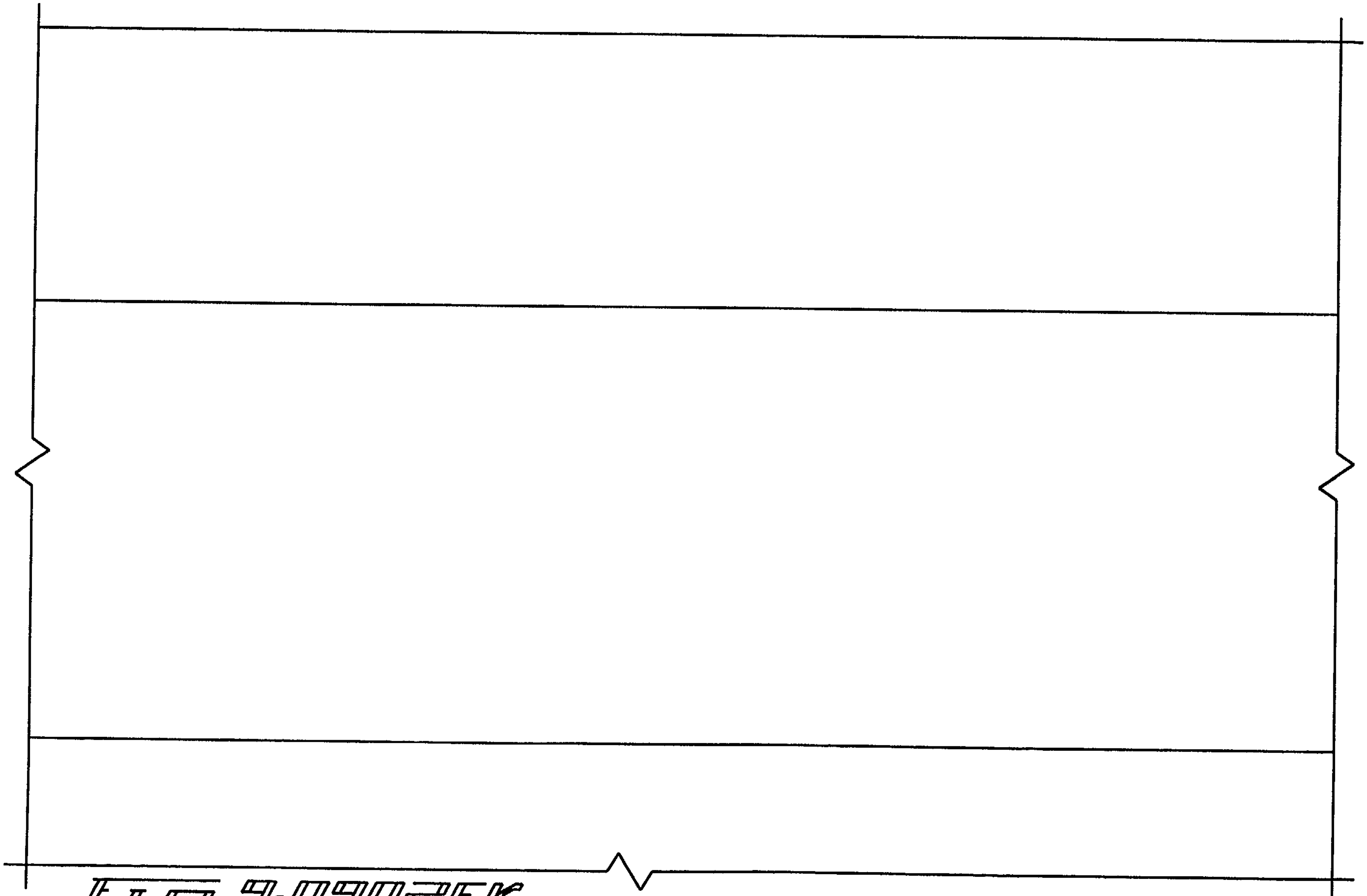


Fig 9.0902EK

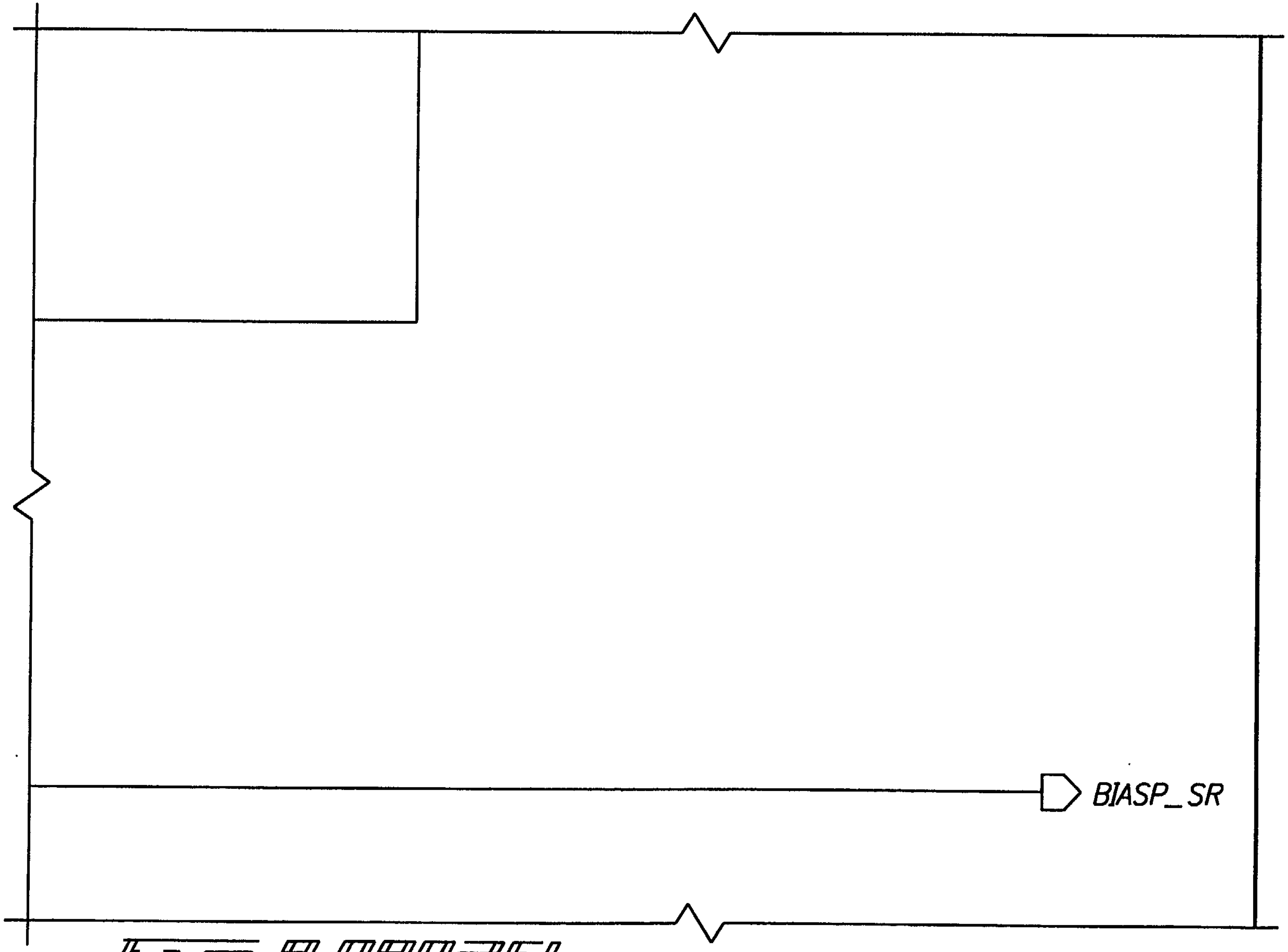


FIG 9.0902EL

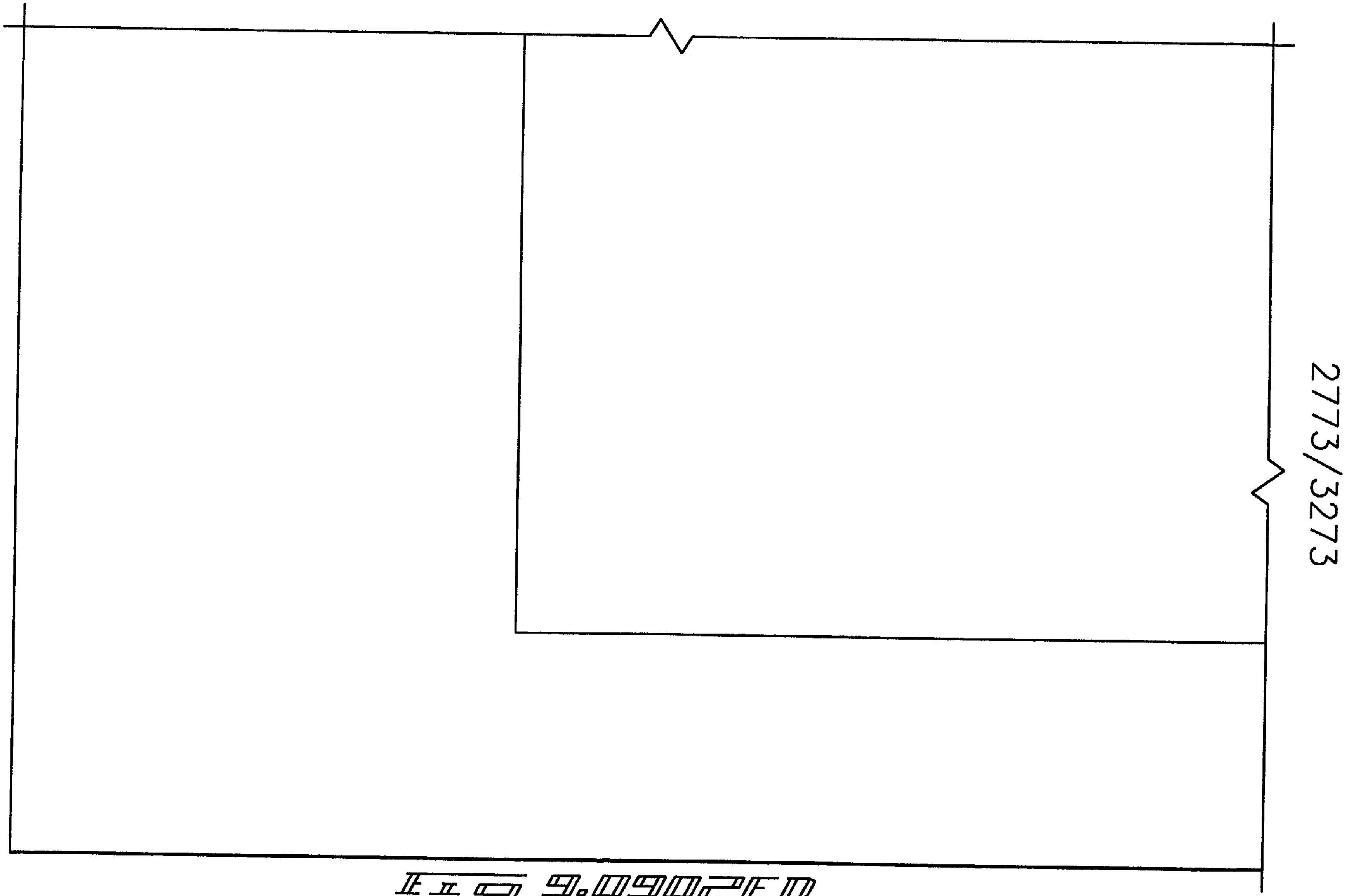


Fig 9.0902FD

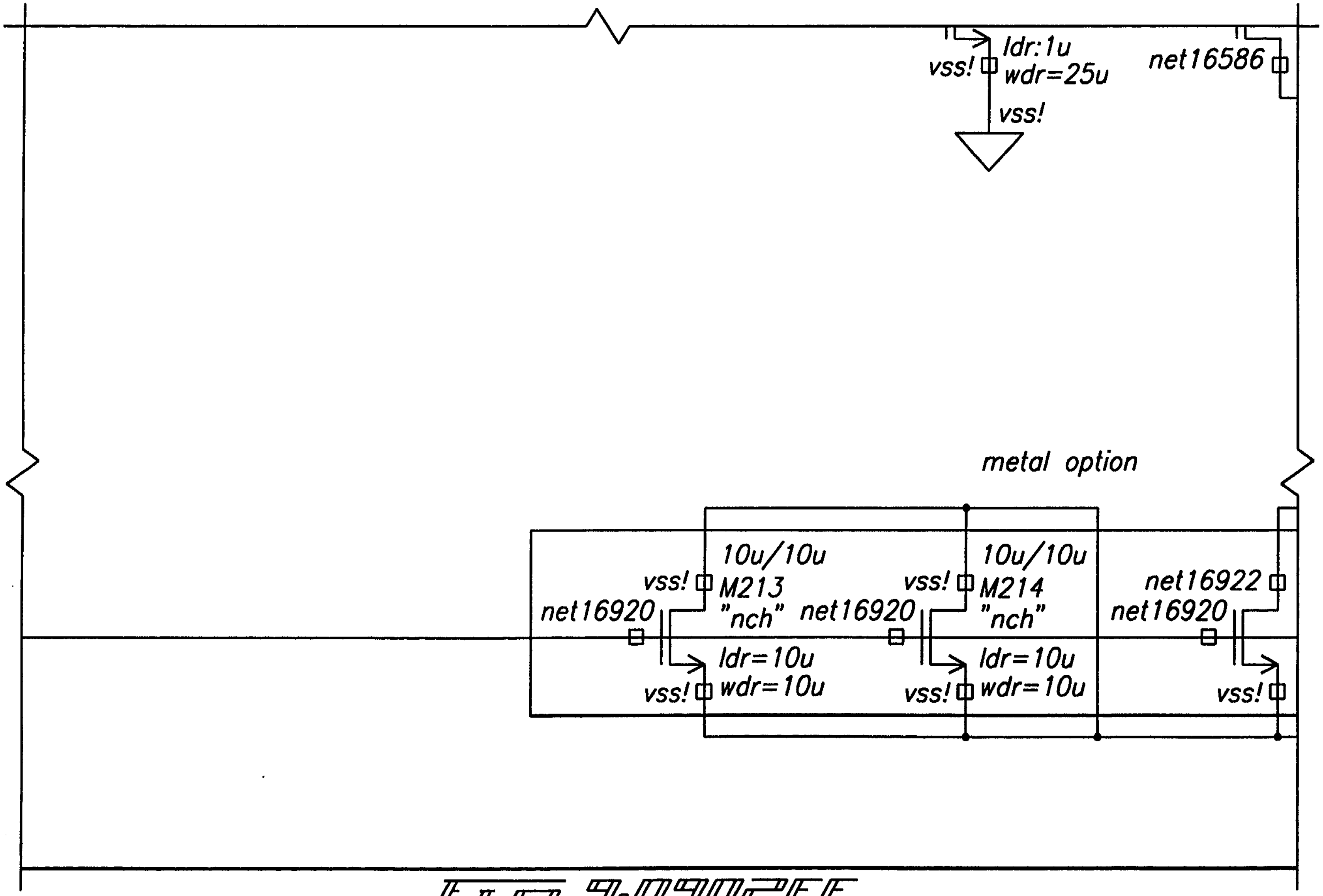

ldr:1u
wdr=25u
vss!
vss!
net16586
metal option
10u/10u
M213
"nch"
vss!
net16920
ldr=10u
wdr=10u
vss!
10u/10u
M214
"nch"
vss!
net16920
ldr=10u
wdr=10u
vss!
net16922
net16920
vss!

Fig 9.0902FE

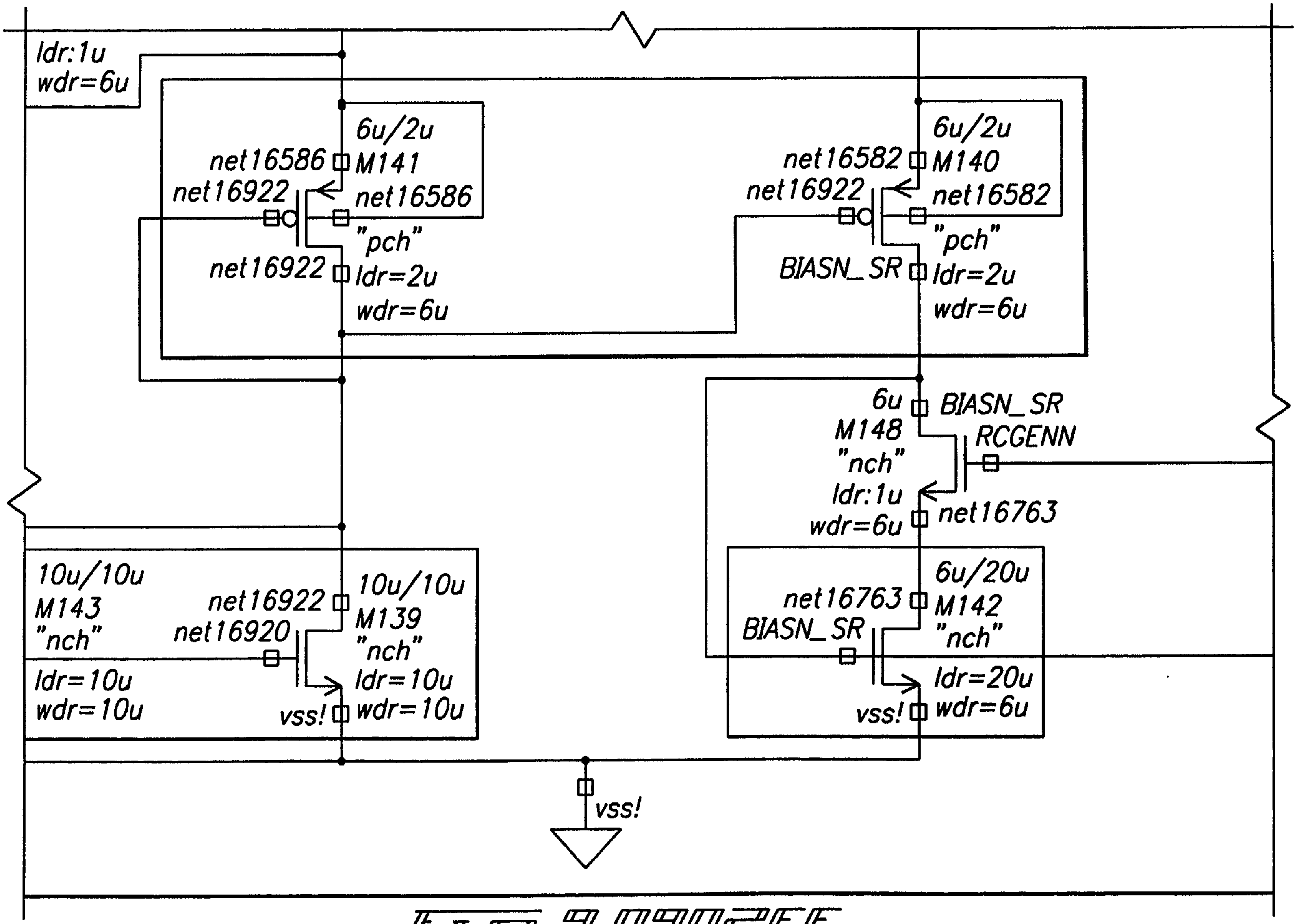

ldr:1u
wdr=6u
6u/2u
net16586
M141
net16922
net16586
"pch"
net16922
ldr=2u
wdr=6u
6u/2u
net16582
M140
net16922
net16582
"pch"
BIASN_SR
ldr=2u
wdr=6u
6u
BIASN_SR
M148
RCGENN
"nch"
ldr:1u
net16763
wdr=6u
10u/10u
M143
"nch"
ldr=10u
wdr=10u
net16922
10u/10u
net16920
M139
"nch"
ldr=10u
vss!
wdr=10u
net16763
6u/20u
BIASN_SR
M142
"nch"
ldr=20u
vss!
wdr=6u
vss!

Fig 9.0902FF

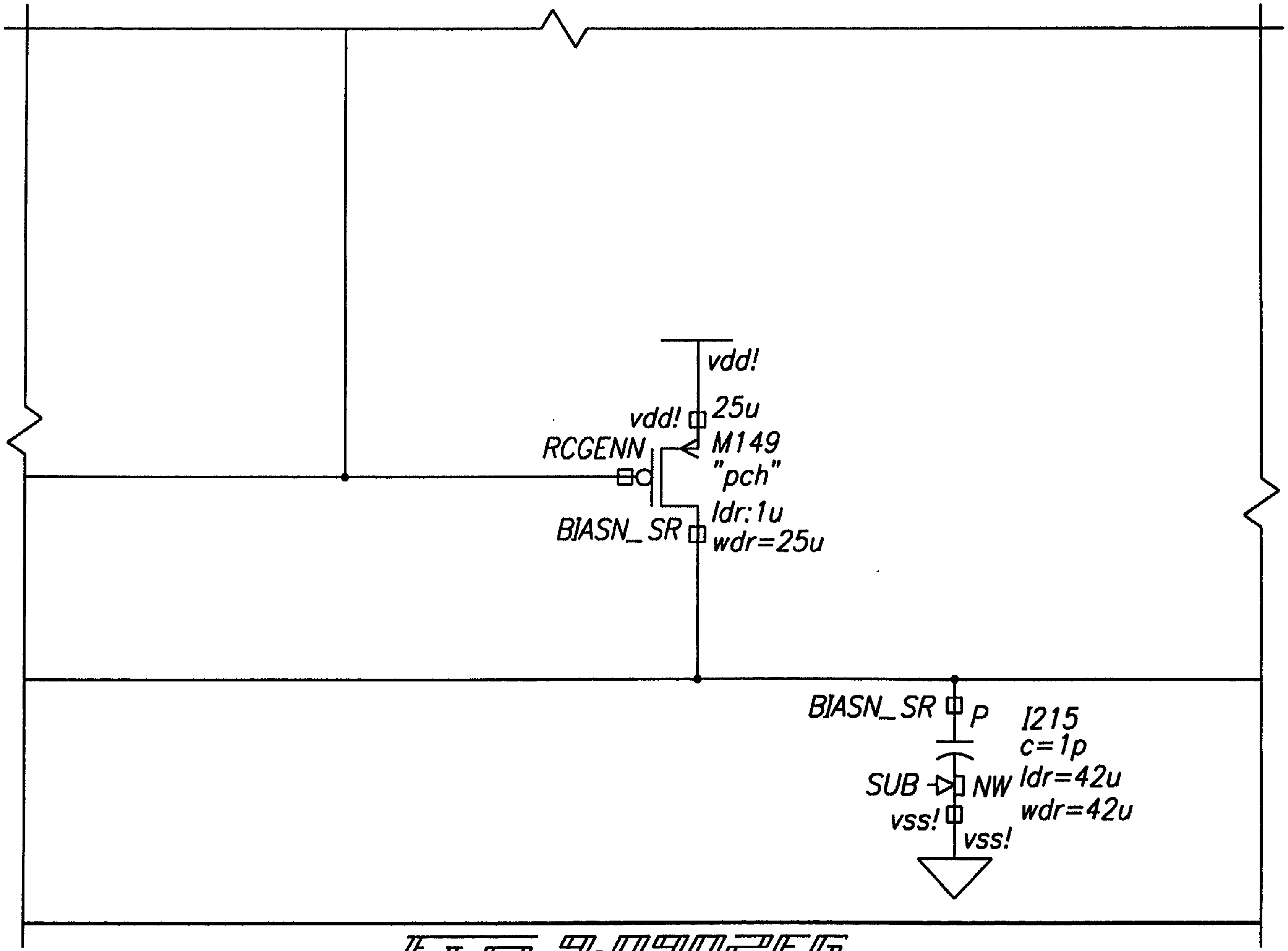

vdd!
vdd!
25u
M149
"pch"
RCGENN
BIASN_SR
ldr:1u
wdr=25u
BIASN_SR
P
I215
c=1p
SUB
NW
ldr=42u
wdr=42u
vss!
vss!

Fig 9.0902FG

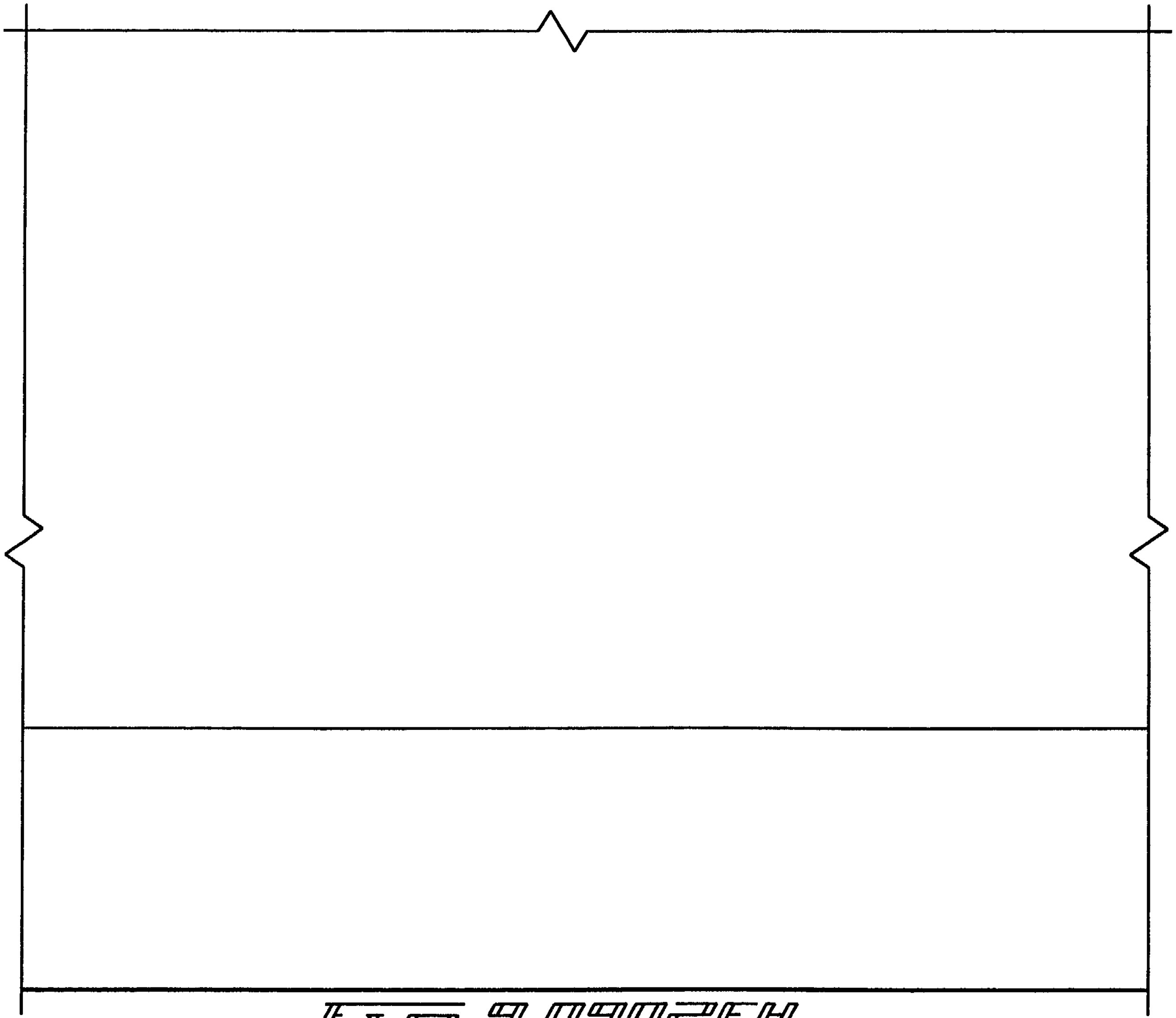


Fig 9.0902FH

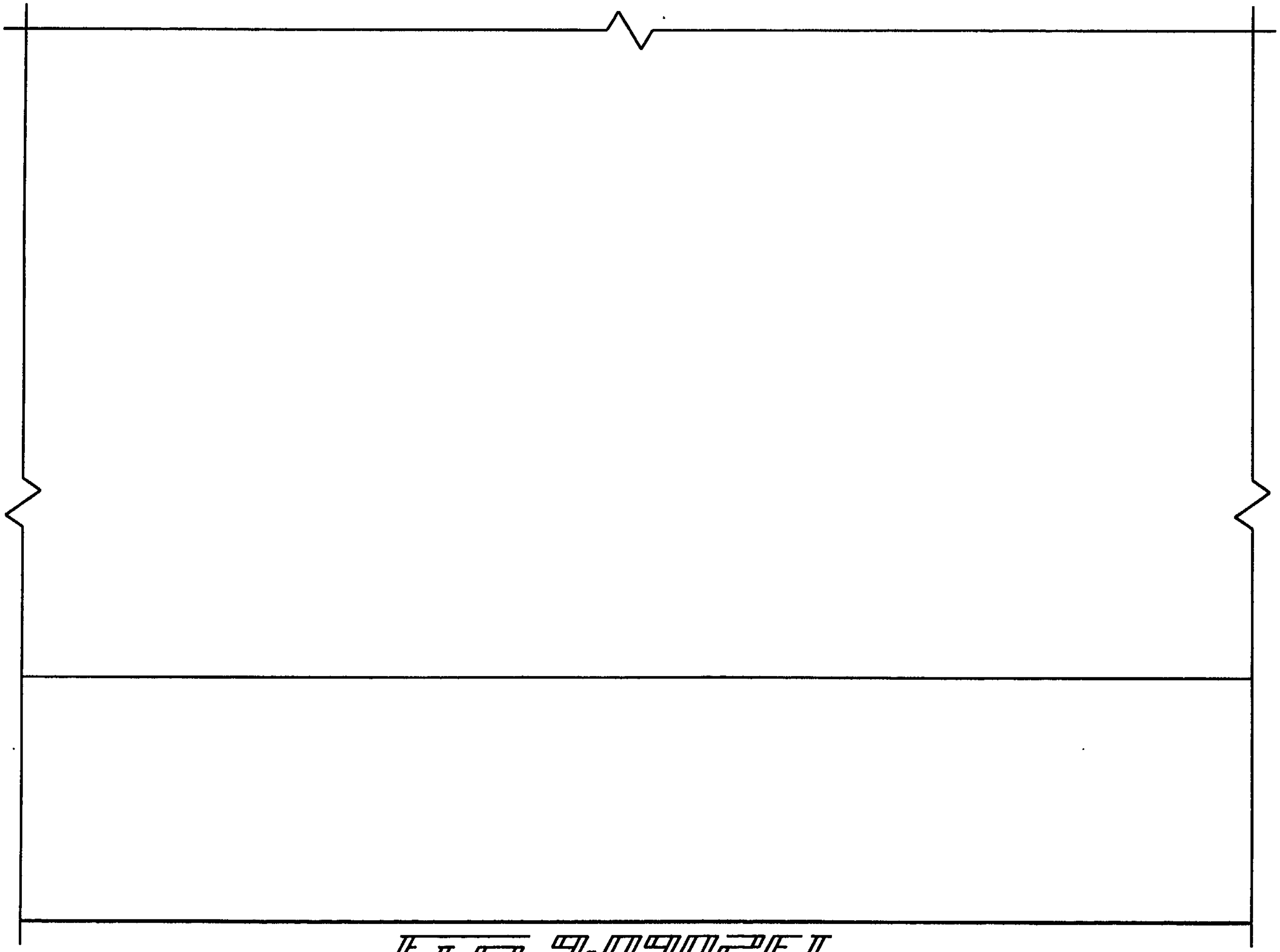


Fig 9.0902FI

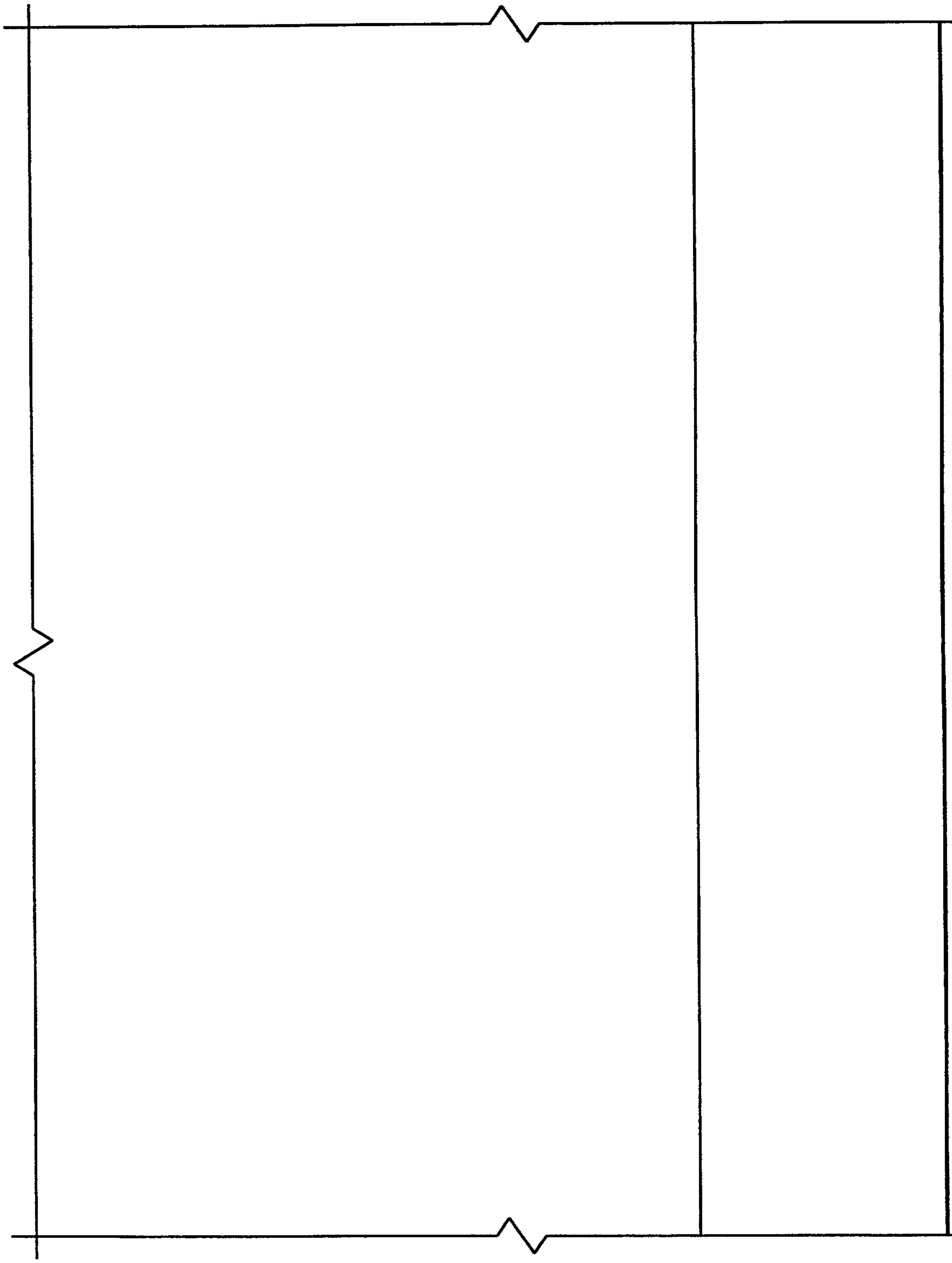


Fig 9.0902FJ

09822063.061101

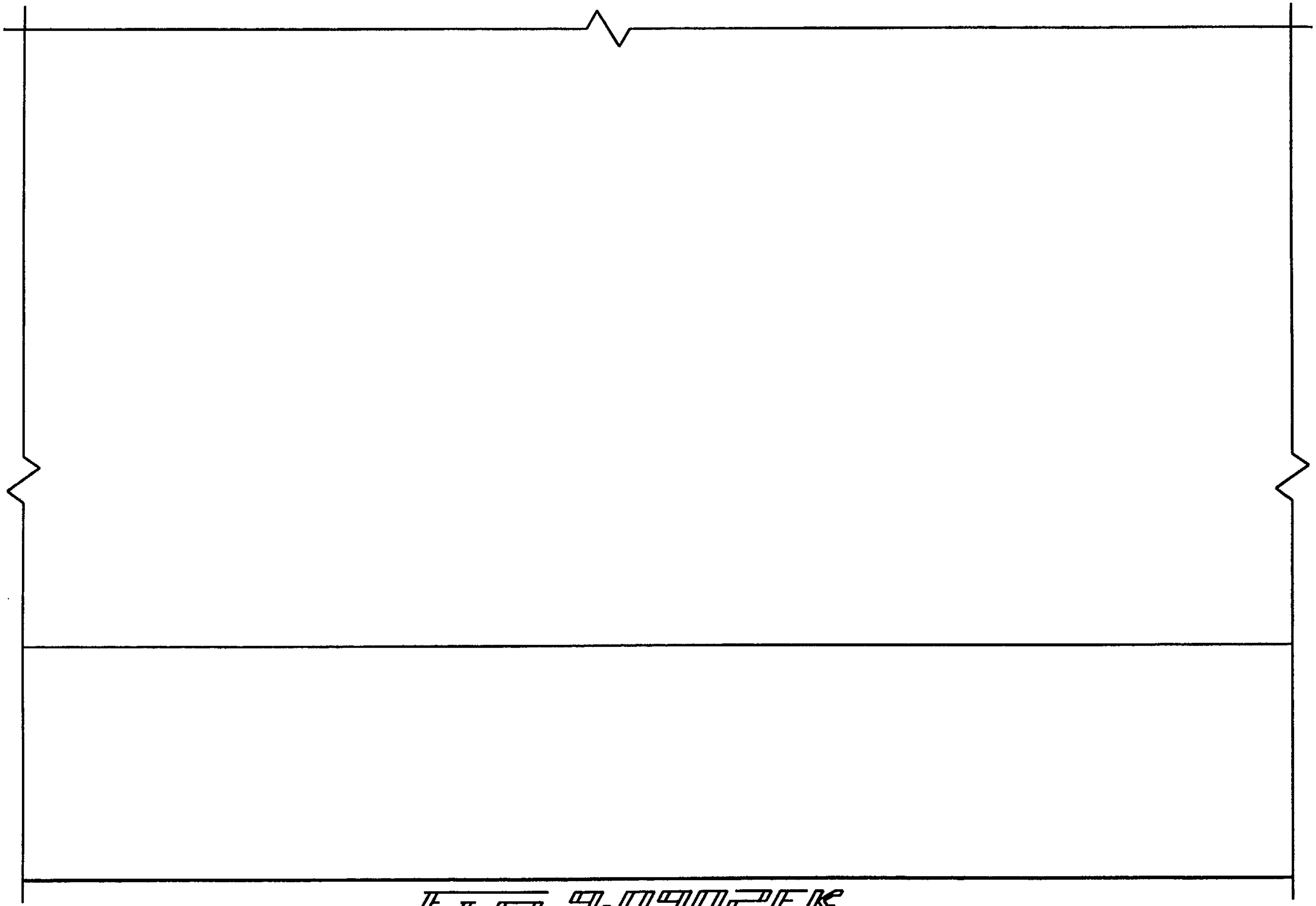


Fig 9.0902FK

2780/3273

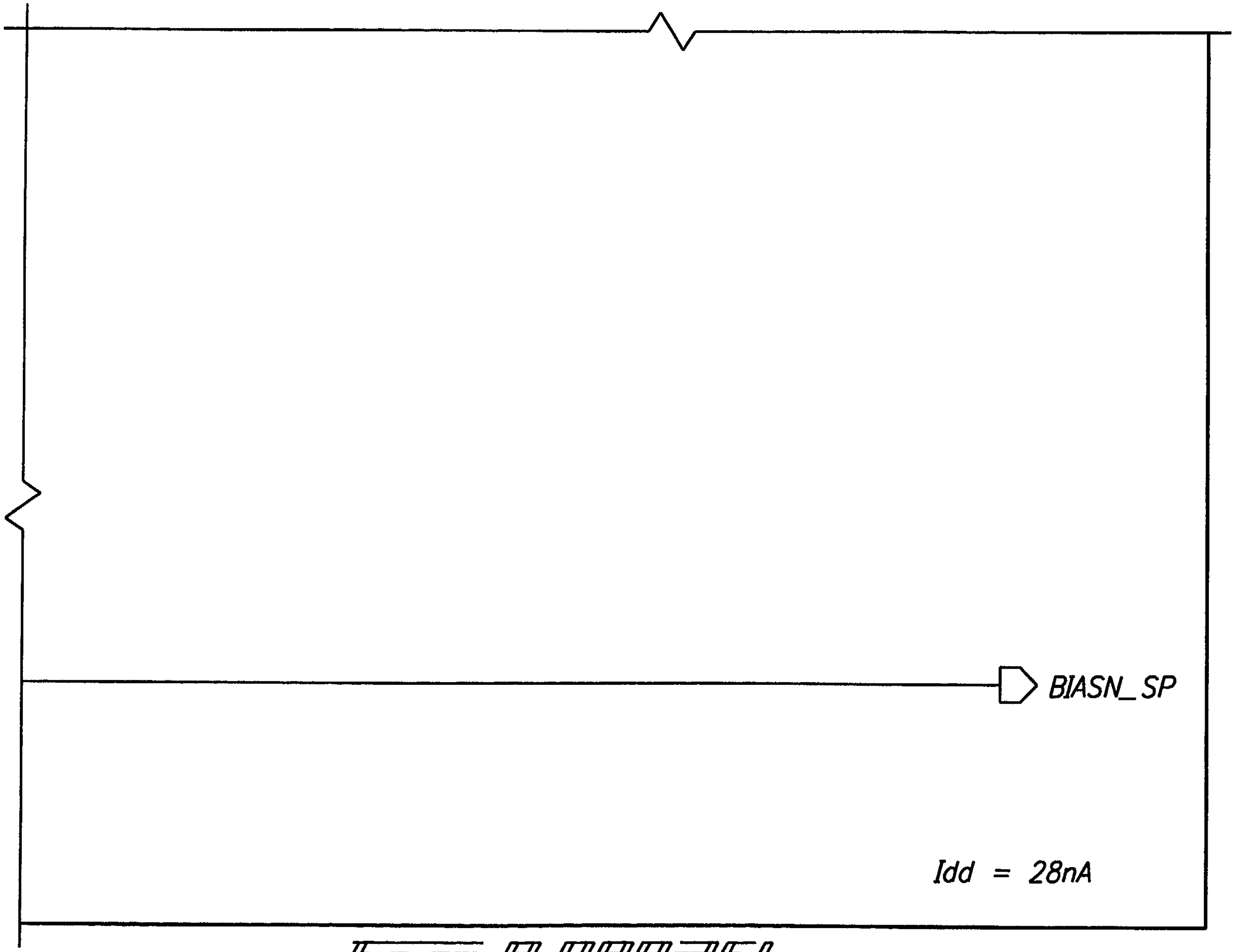


Fig 9.0902FL

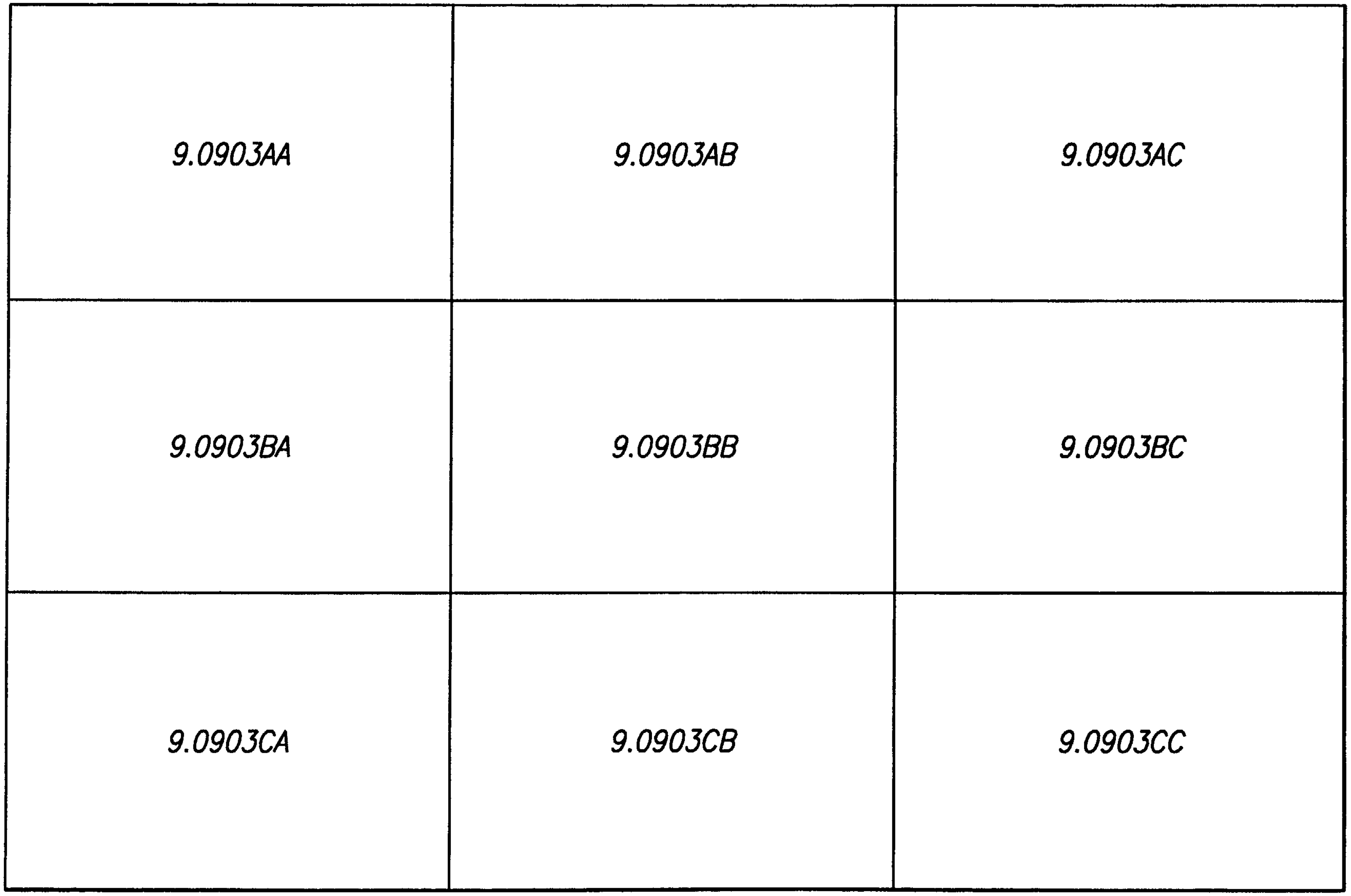

9.0903AA
9.0903AB
9.0903AC
9.0903BA
9.0903BB
9.0903BC
9.0903CA
9.0903CB
9.0903CC

FIG 9.0903

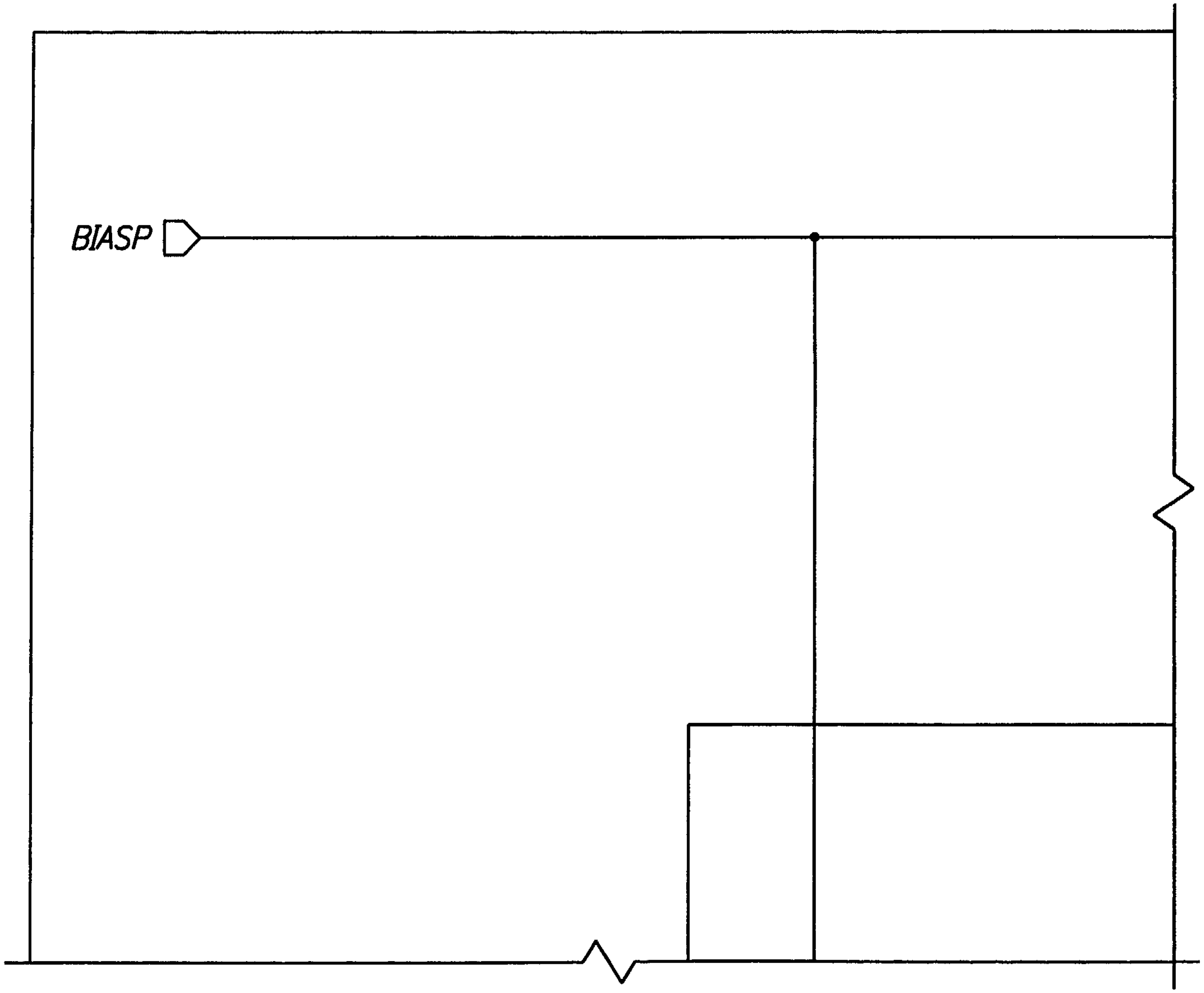


Fig. 9.0903AA

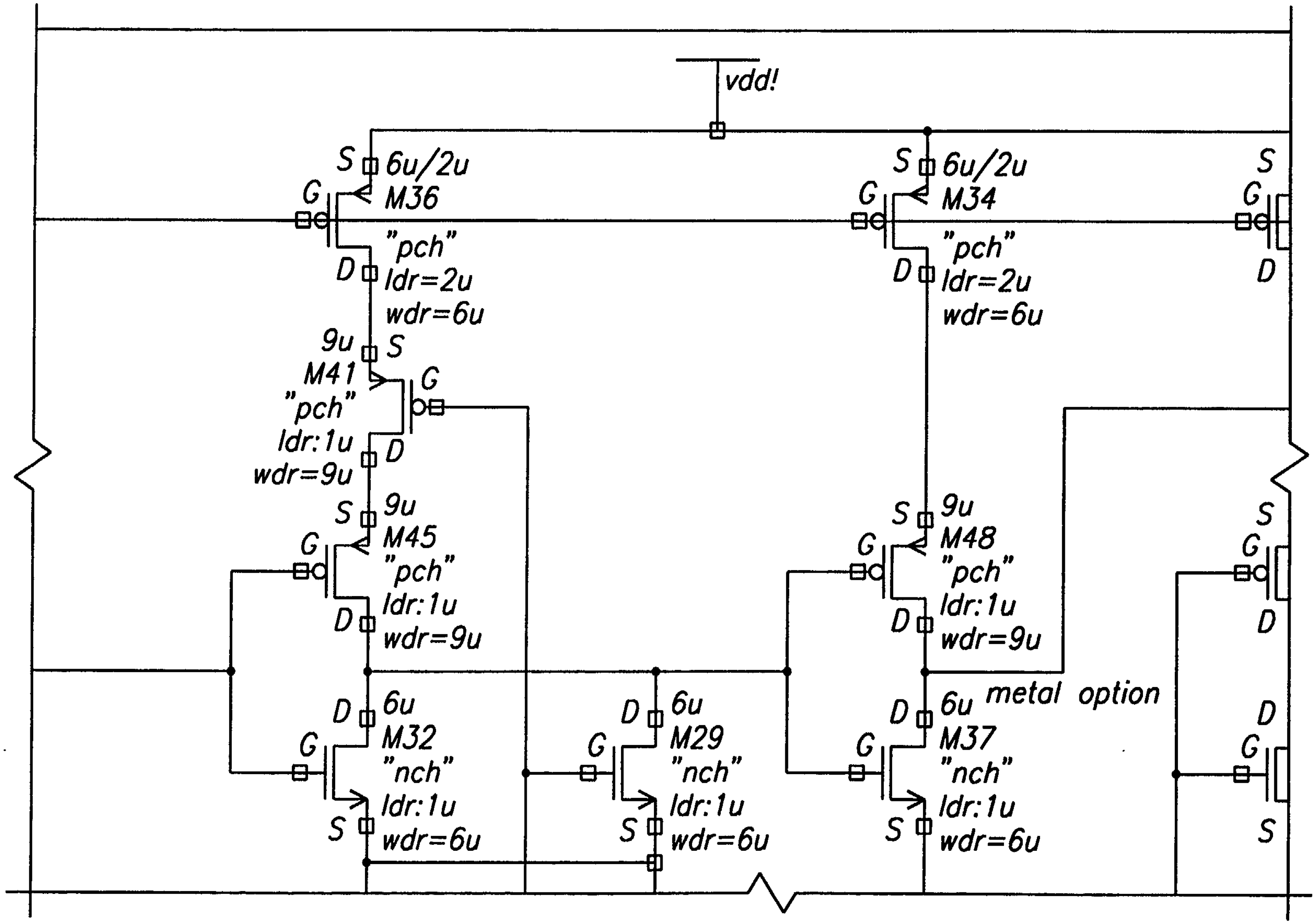

vdd!
S
G
D
6u/2u
M36
"pch"
ldr=2u
wdr=6u
6u/2u
M34
"pch"
ldr=2u
wdr=6u
9u
M41
"pch"
ldr:1u
wdr=9u
9u
M45
"pch"
ldr:1u
wdr=9u
9u
M48
"pch"
ldr:1u
wdr=9u
6u
M32
"nch"
ldr:1u
wdr=6u
6u
M29
"nch"
ldr:1u
wdr=6u
6u
M37
"nch"
ldr:1u
wdr=6u
metal option

Fig 9.0903AB

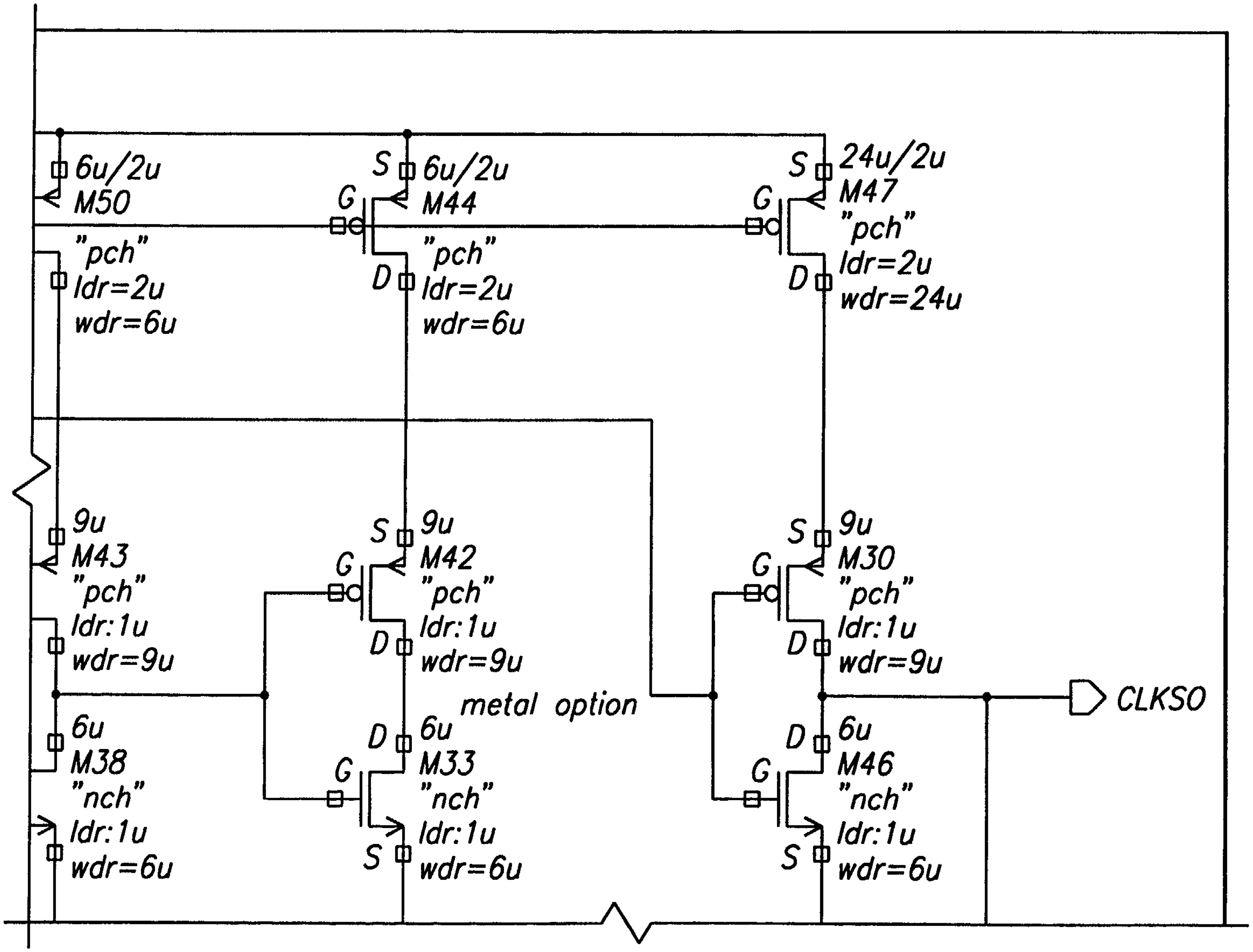

6u/2u
M50
"pch"
ldr=2u
wdr=6u
S
G
D
6u/2u
M44
"pch"
ldr=2u
wdr=6u
S
G
D
24u/2u
M47
"pch"
ldr=2u
wdr=24u
9u
M43
"pch"
ldr:1u
wdr=9u
6u
M38
"nch"
ldr:1u
wdr=6u
S
G
D
9u
M42
"pch"
ldr:1u
wdr=9u
D
G
S
6u
M33
"nch"
ldr:1u
wdr=6u
metal option
S
G
D
9u
M30
"pch"
ldr:1u
wdr=9u
D
G
S
6u
M46
"nch"
ldr:1u
wdr=6u
CLKSO

Fig 9.0903AC

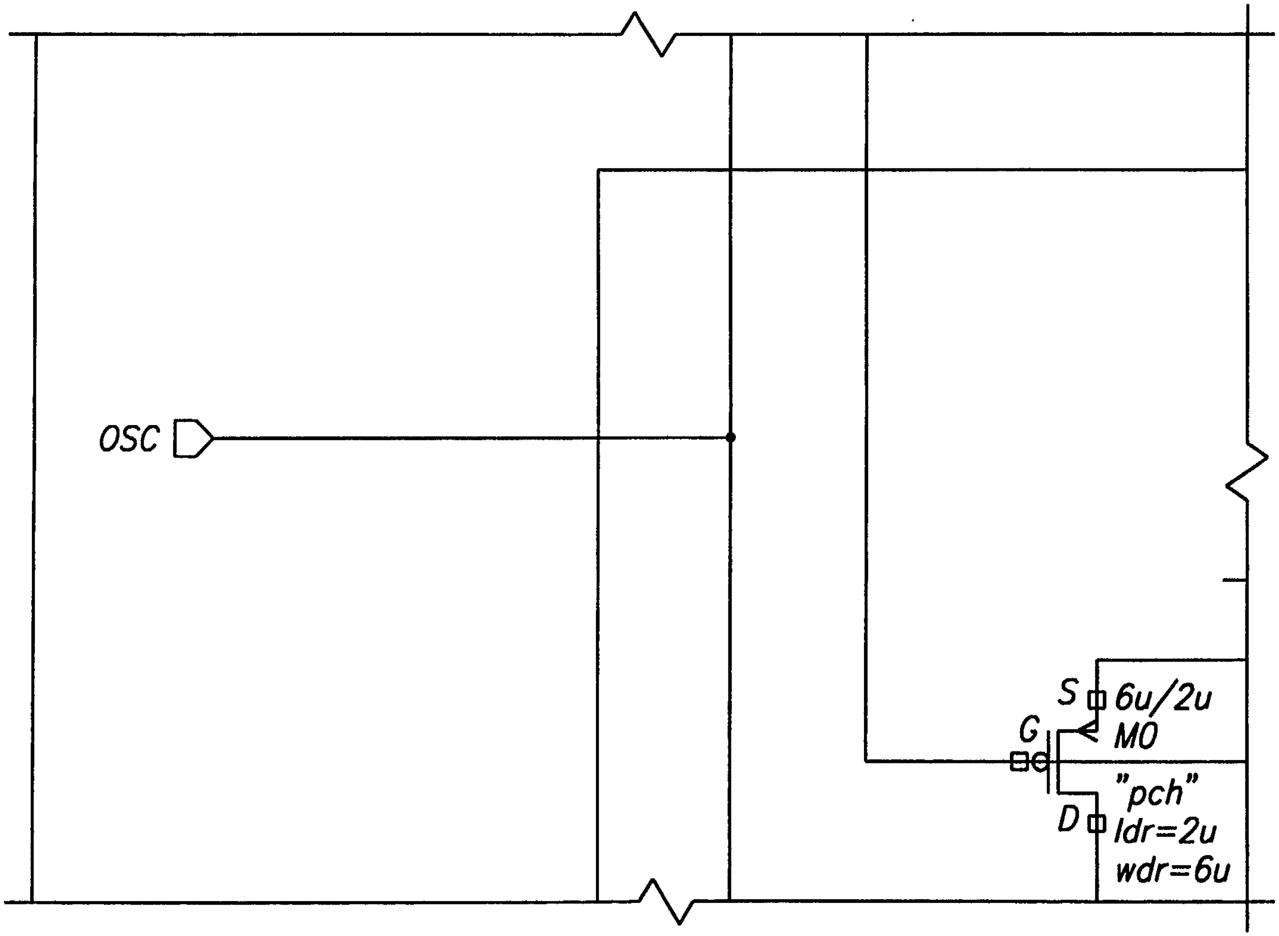


Fig 9.0903BA

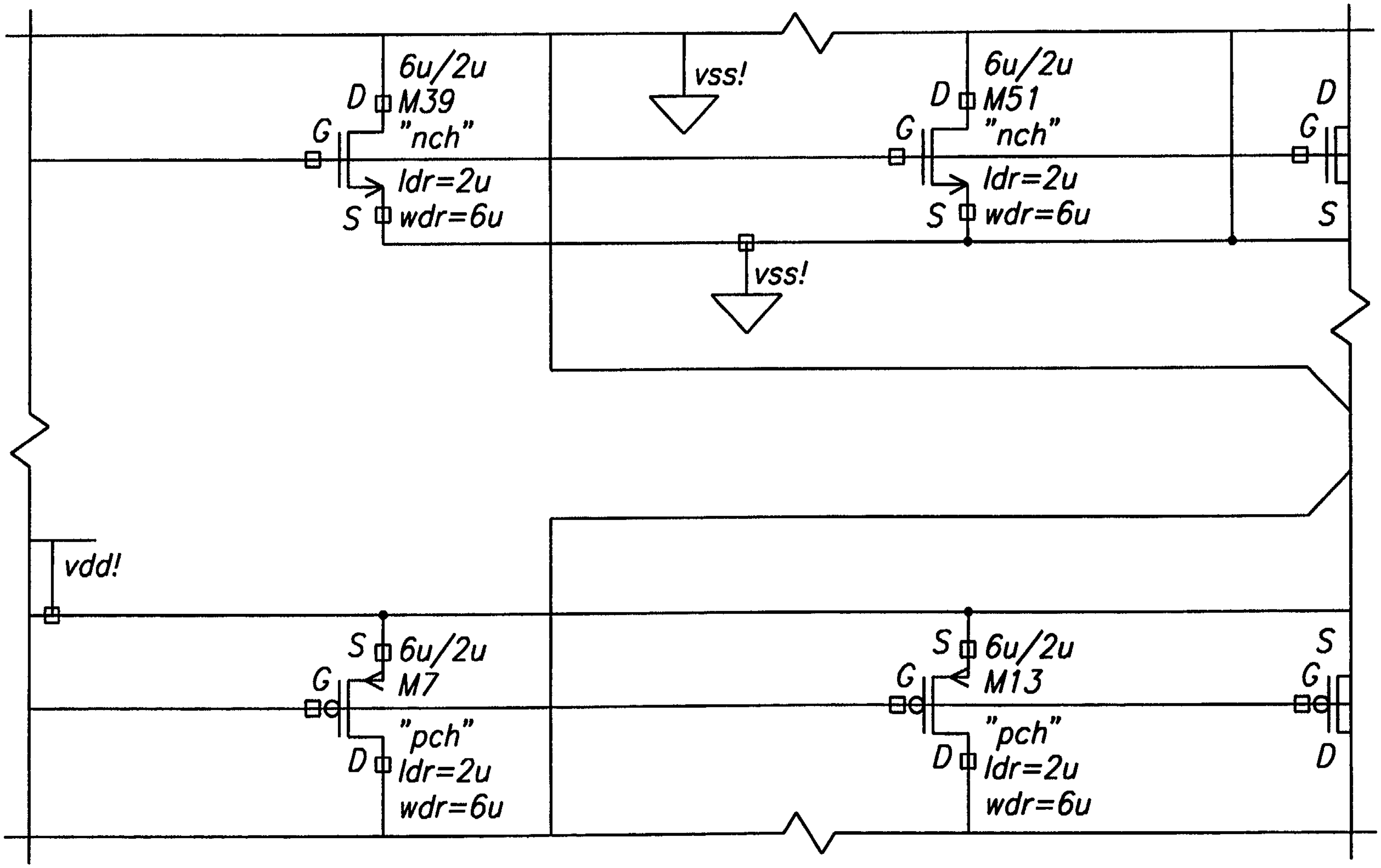

6u/2u
D
M39
G
"nch"
ldr=2u
S
wdr=6u
vss!
6u/2u
D
M51
G
"nch"
ldr=2u
S
wdr=6u
D
G
S
vss!
vdd!
S
6u/2u
G
M7
"pch"
D
ldr=2u
wdr=6u
S
6u/2u
G
M13
"pch"
D
ldr=2u
wdr=6u
S
G
D

Fig 9.0903BA

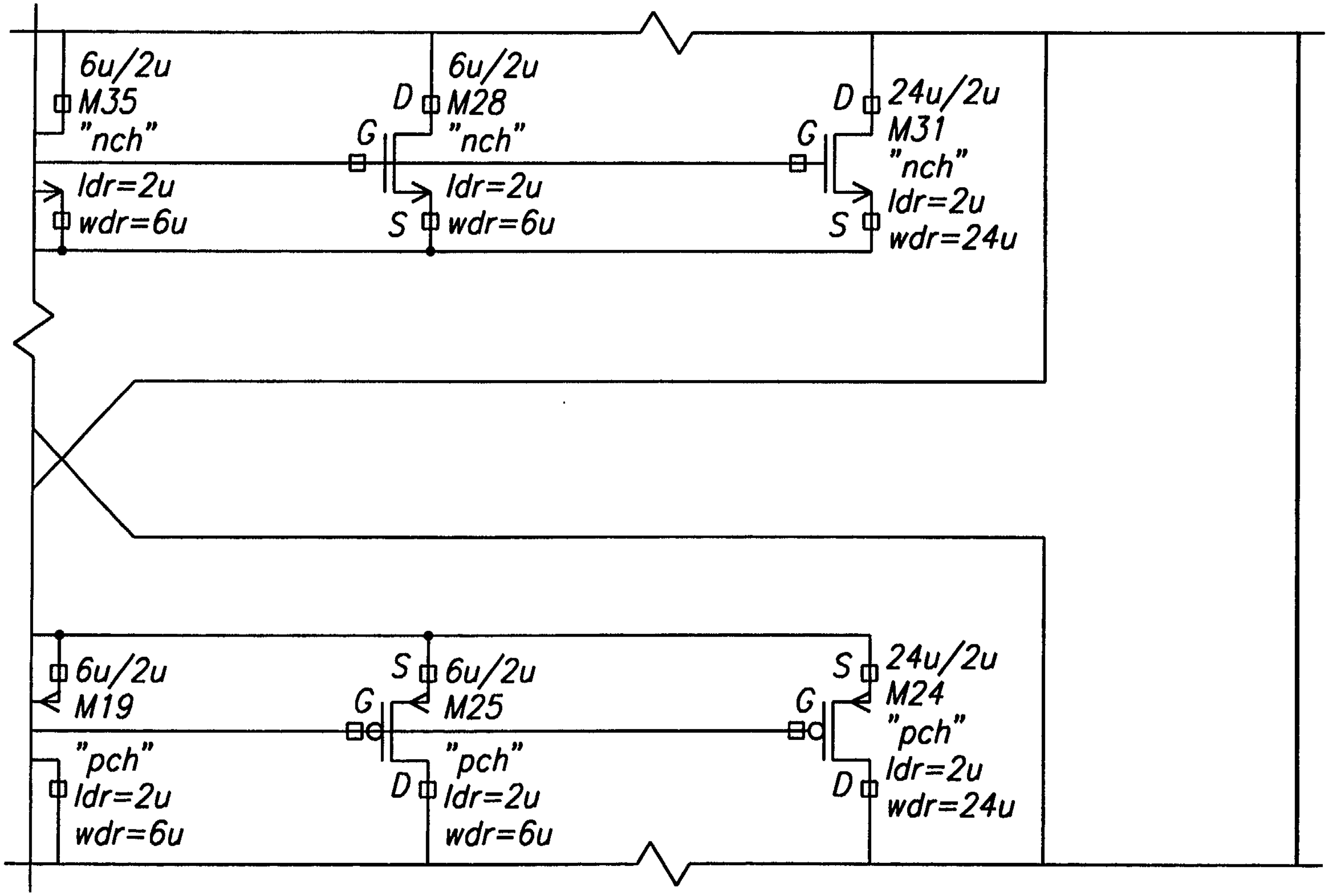

6u/2u
M35
"nch"
ldr=2u
wdr=6u
D
G
S
6u/2u
M28
"nch"
ldr=2u
wdr=6u
D
G
S
24u/2u
M31
"nch"
ldr=2u
wdr=24u
6u/2u
M19
"pch"
ldr=2u
wdr=6u
S
G
D
6u/2u
M25
"pch"
ldr=2u
wdr=6u
S
G
D
24u/2u
M24
"pch"
ldr=2u
wdr=24u

Fig 9.0903BC

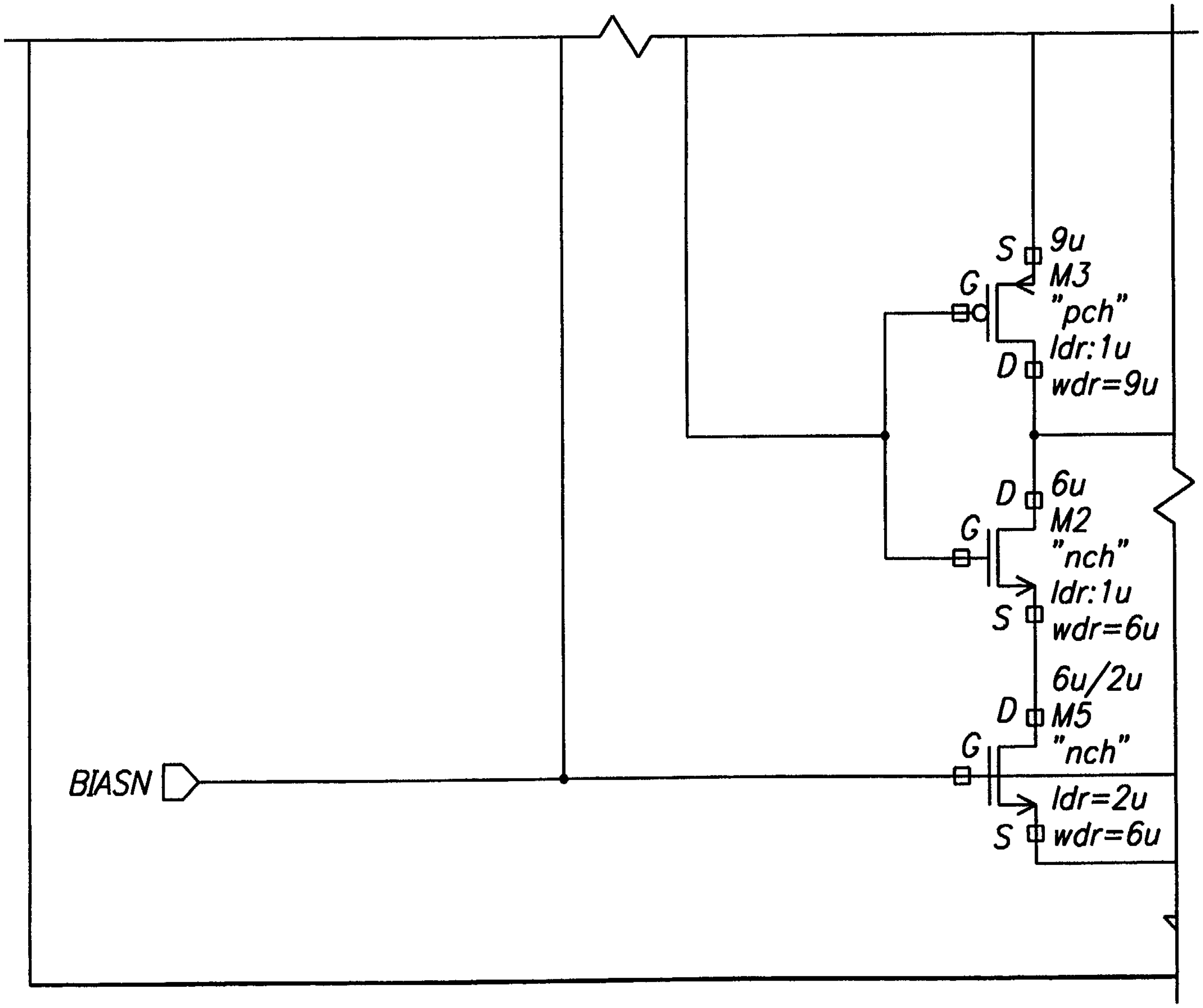

S
G
D
9u
M3
"pch"
ldr:1u
wdr=9u
D
G
S
6u
M2
"nch"
ldr:1u
wdr=6u
6u/2u
D
G
S
M5
"nch"
ldr=2u
wdr=6u
BIASN

Fig 9.0903CA

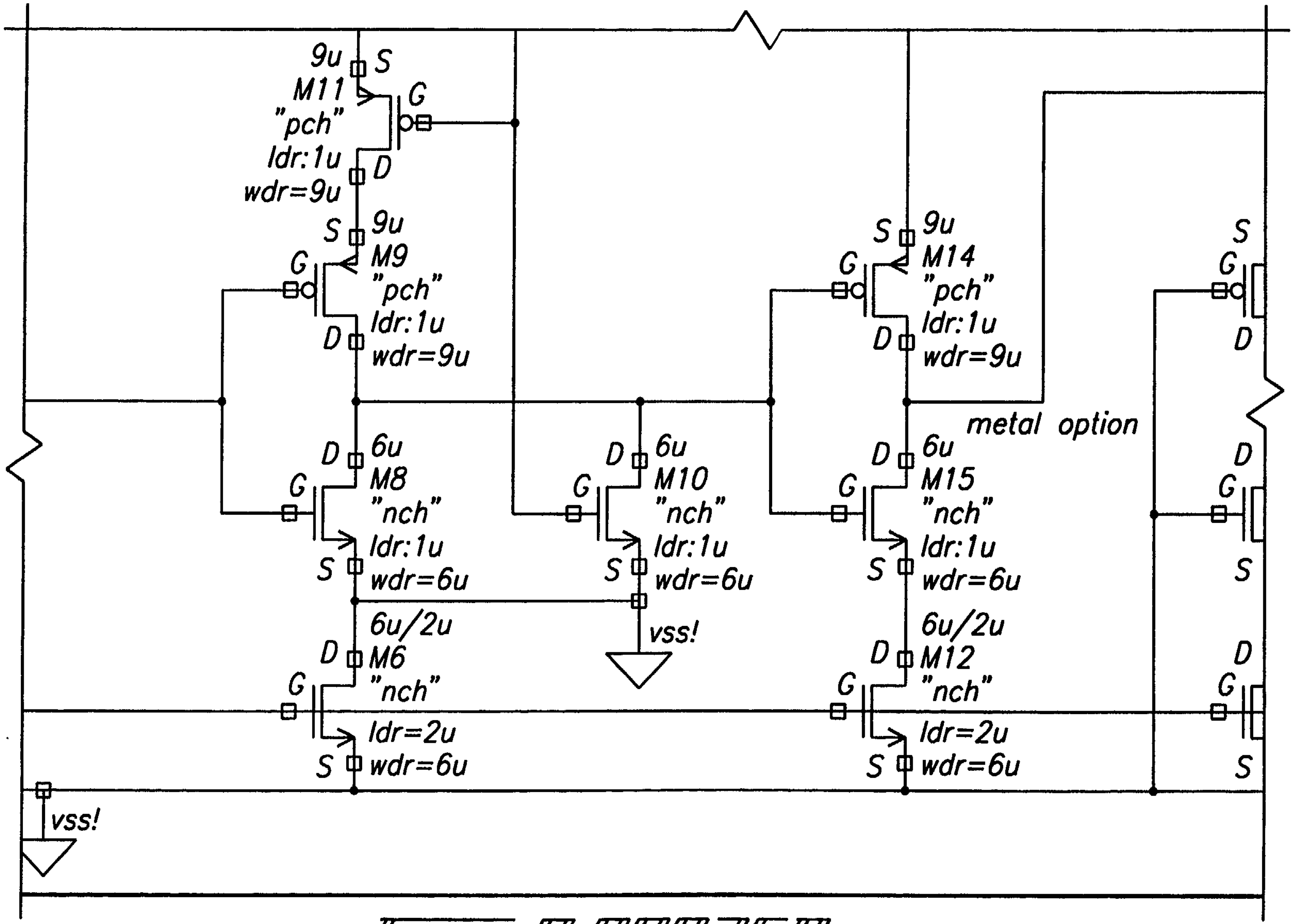

9u
S
M11
G
"pch"
ldr:1u
D
wdr=9u
S
9u
M9
G
"pch"
ldr:1u
D
wdr=9u
S
9u
M14
G
"pch"
ldr:1u
D
wdr=9u
S
G
D
metal option
D
6u
M8
G
"nch"
ldr:1u
S
wdr=6u
D
6u
M10
G
"nch"
ldr:1u
S
wdr=6u
vss!
D
6u
M15
G
"nch"
ldr:1u
S
wdr=6u
D
G
S
6u/2u
D
M6
G
"nch"
ldr=2u
S
wdr=6u
6u/2u
D
M12
G
"nch"
ldr=2u
S
wdr=6u
D
G
S
vss!

Fig 9.0903CB

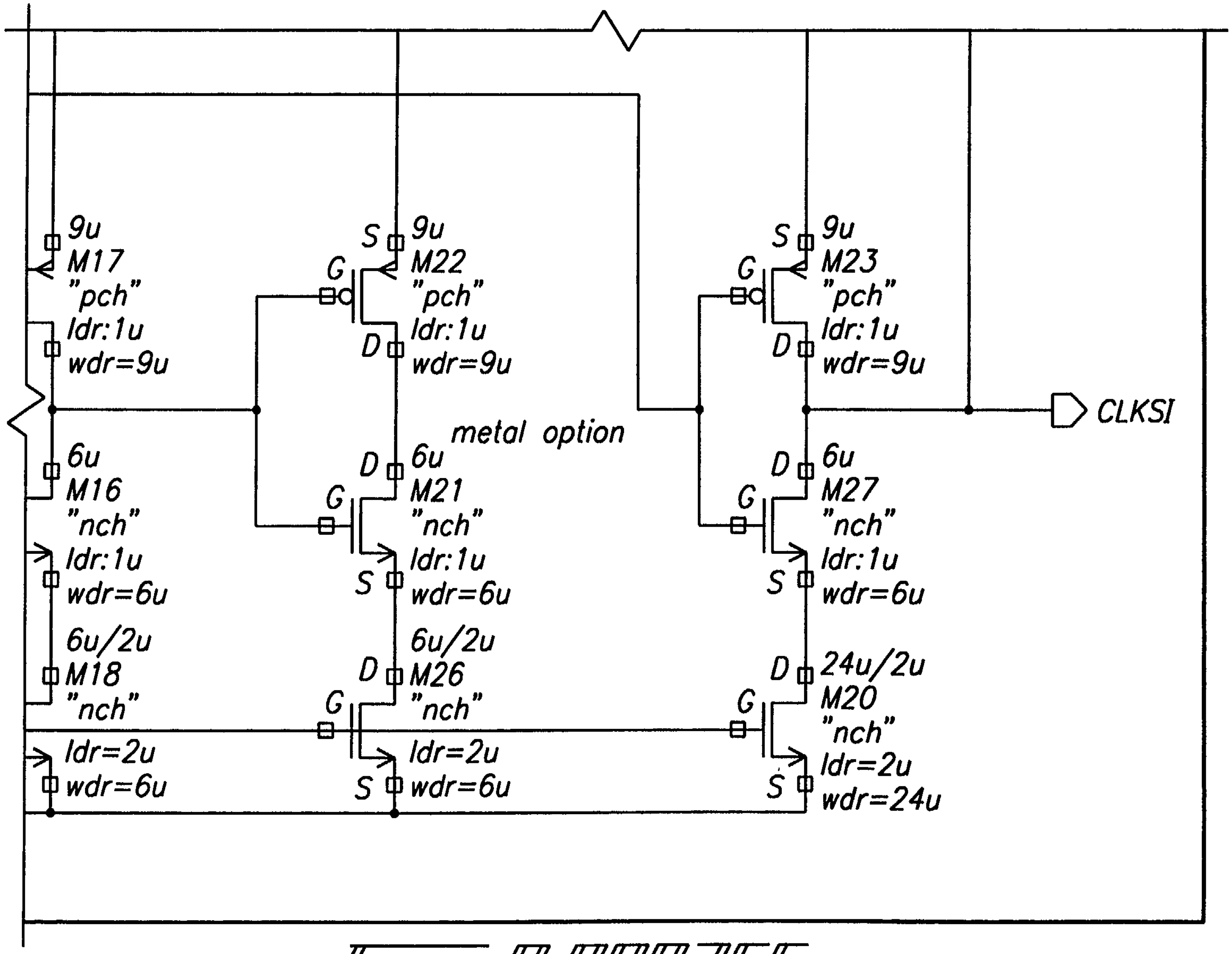

9u
M17
"pch"
ldr:1u
wdr=9u
6u
M16
"nch"
ldr:1u
wdr=6u
6u/2u
M18
"nch"
ldr=2u
wdr=6u
S
G
D
9u
M22
"pch"
ldr:1u
wdr=9u
metal option
D
G
S
6u
M21
"nch"
ldr:1u
wdr=6u
D
G
S
6u/2u
M26
"nch"
ldr=2u
wdr=6u
S
G
D
9u
M23
"pch"
ldr:1u
wdr=9u
D
G
S
6u
M27
"nch"
ldr:1u
wdr=6u
D
G
S
24u/2u
M20
"nch"
ldr=2u
wdr=24u
CLKSI

Fig 9.0903CC

10AA	10AB	10AC	10AD
10BA	10BB	10BC	10BD
10CA	10CB	10CC	10CD
10DA	10DB	10DC	10DD

Fig 10

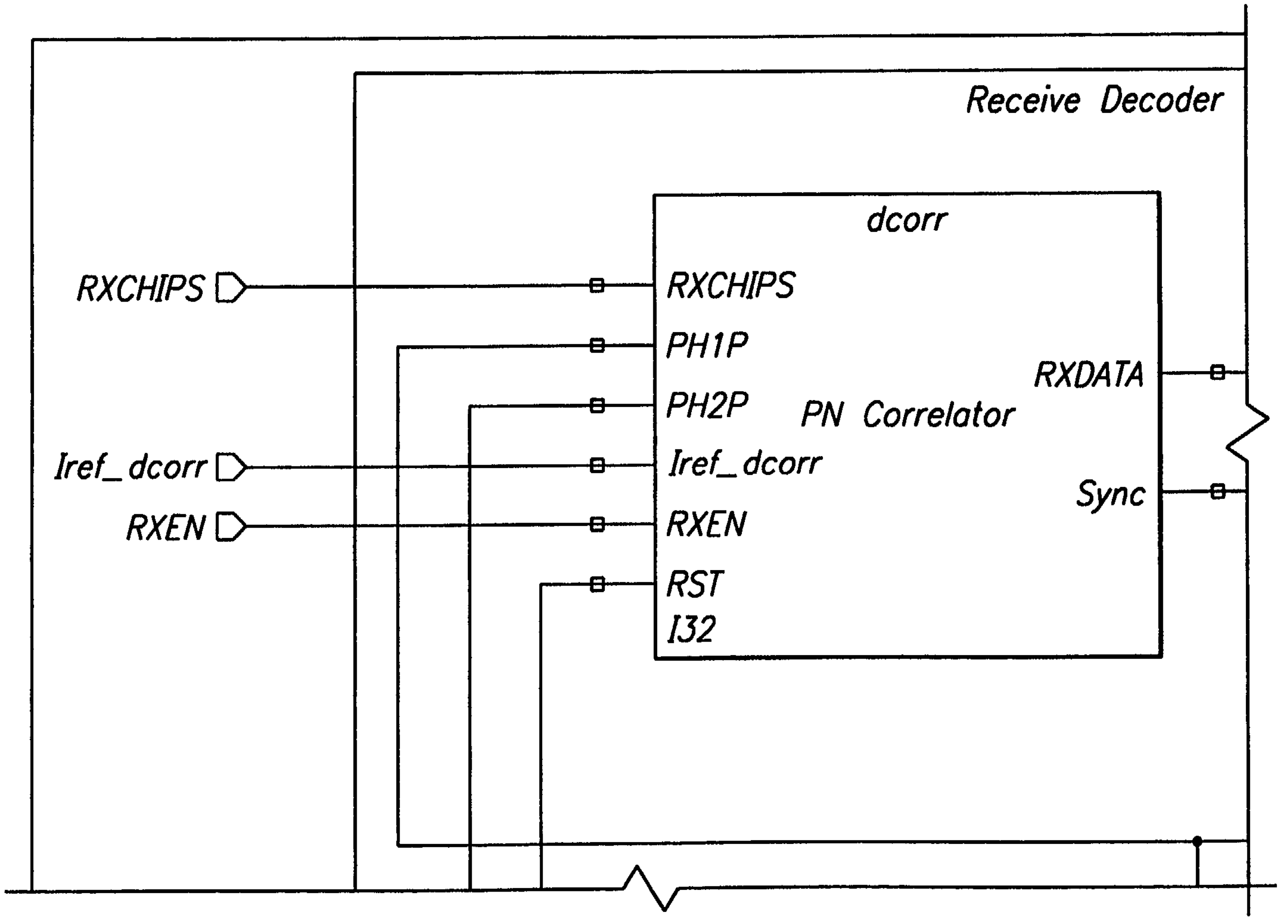

Receive Decoder
dcorr
RXCHIPS
PH1P
PH2P
PN Correlator
Iref_dcorr
RXEN
RST
I32
RXDATA
Sync
RXCHIPS
Iref_dcorr
RXEN

Fig. 10AA

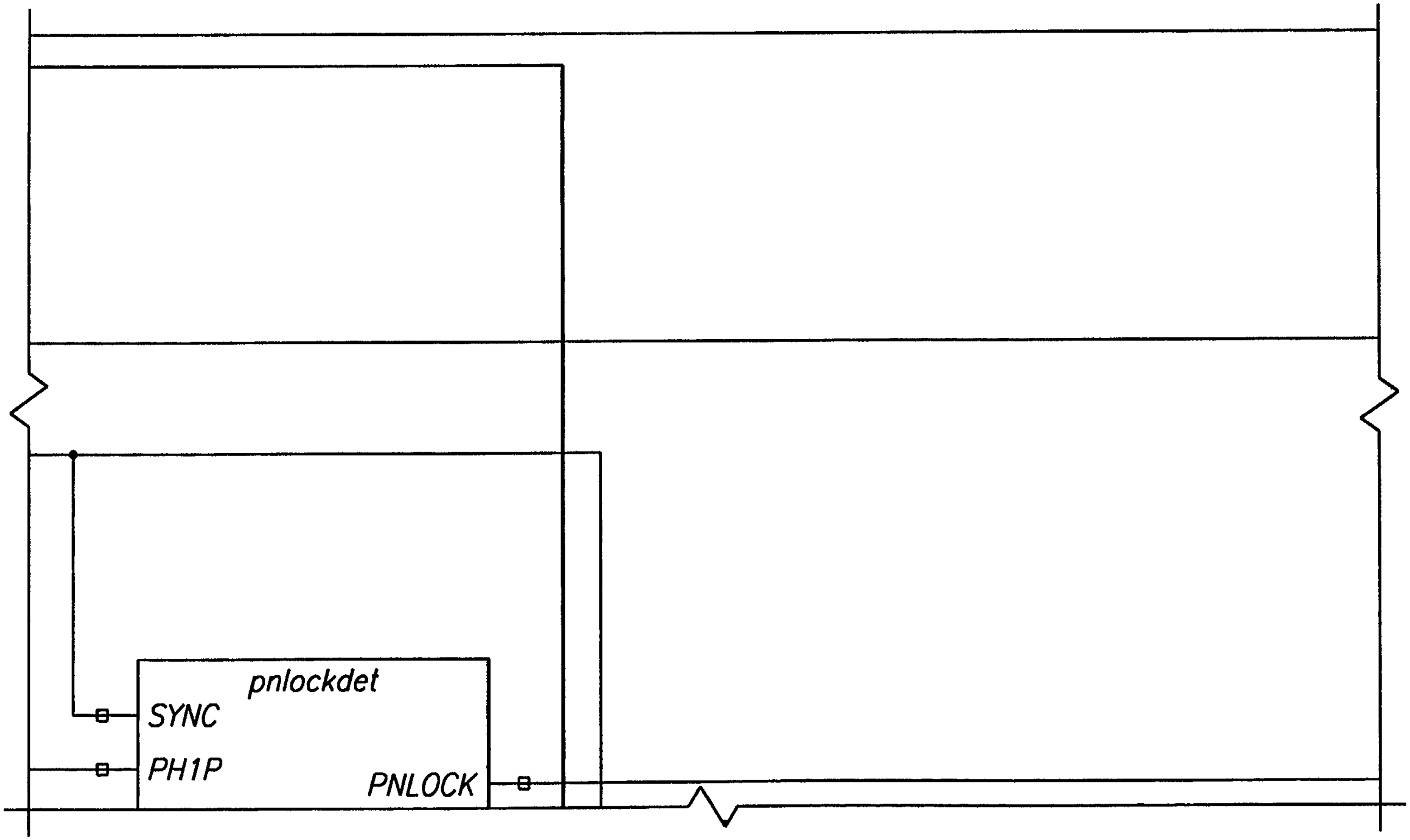


Fig 10AB

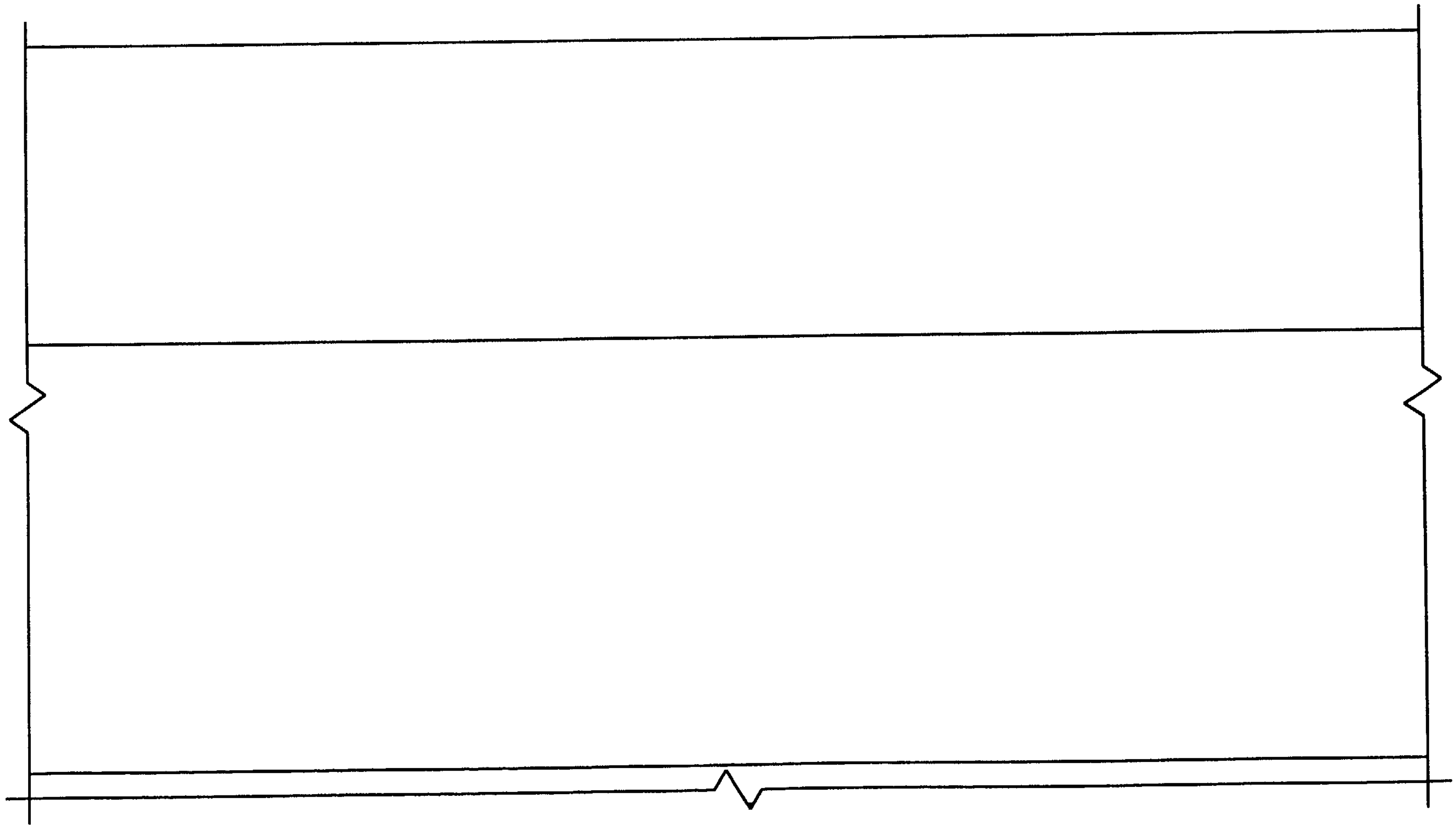


FIG 10AC

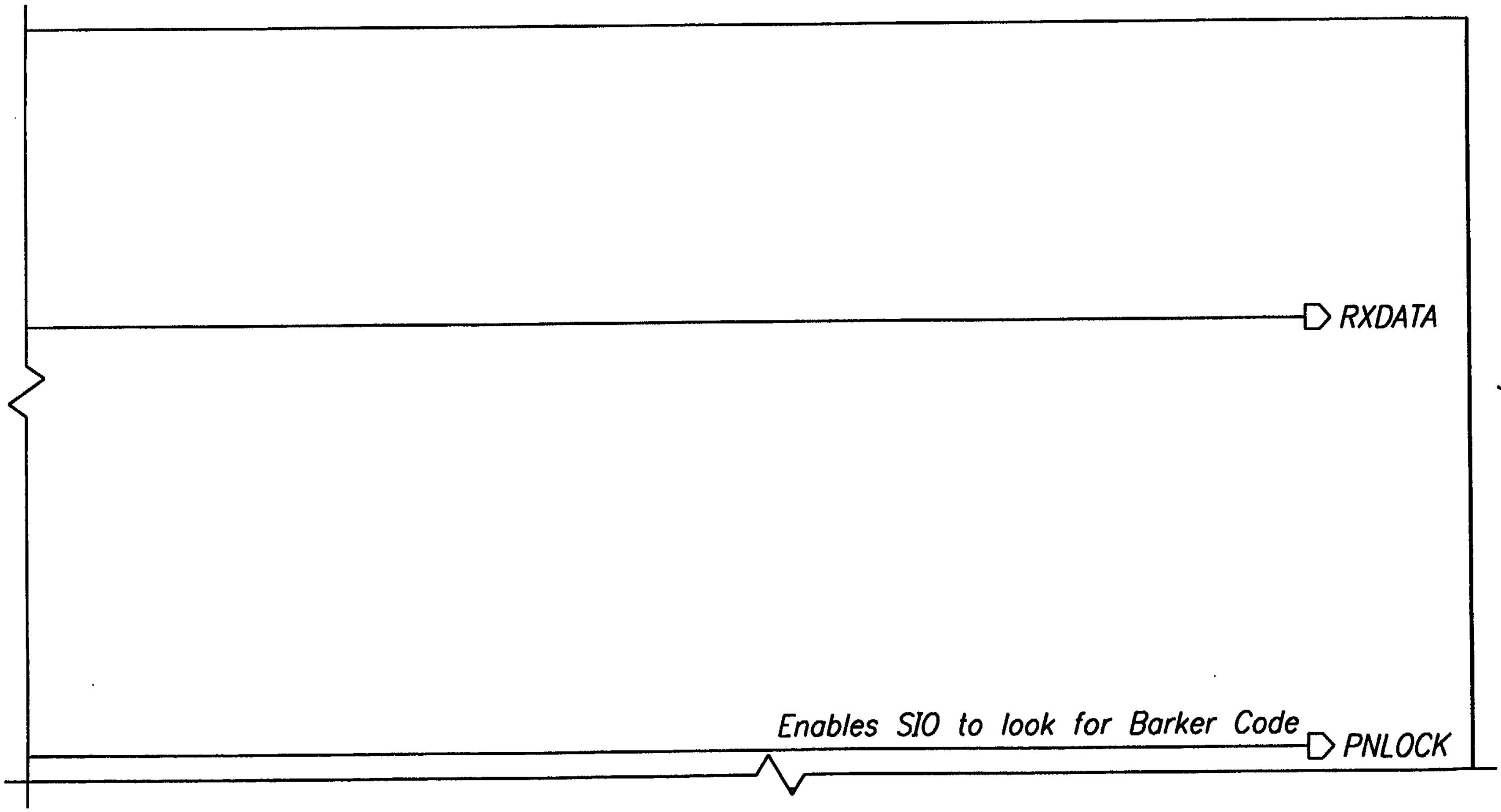


Fig. 10AD

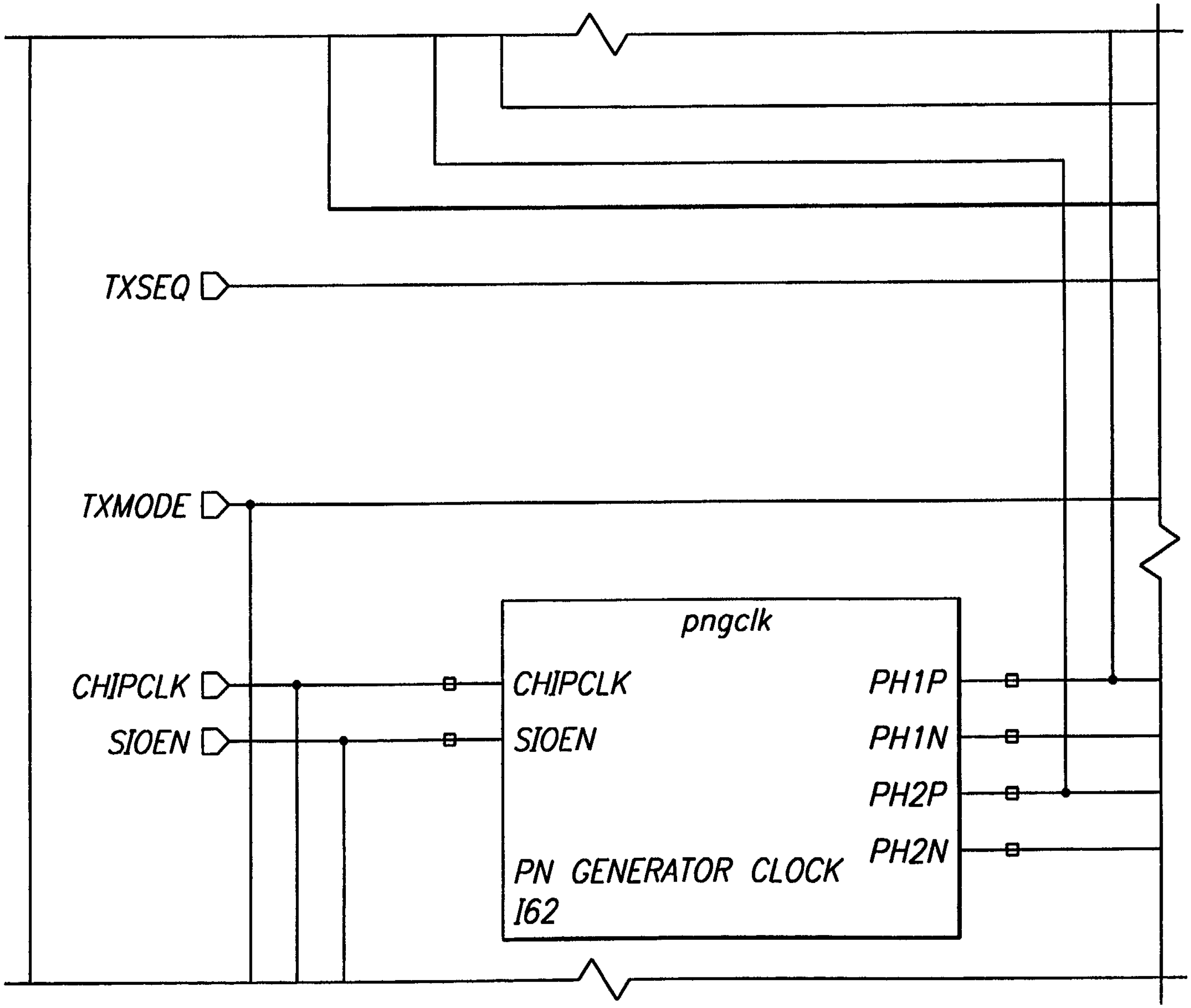

TXSEQ
TXMODE
CHIPCLK
SIOEN
pngclk
CHIPCLK
SIOEN
PH1P
PH1N
PH2P
PH2N
PN GENERATOR CLOCK
I62

Fig 10BA

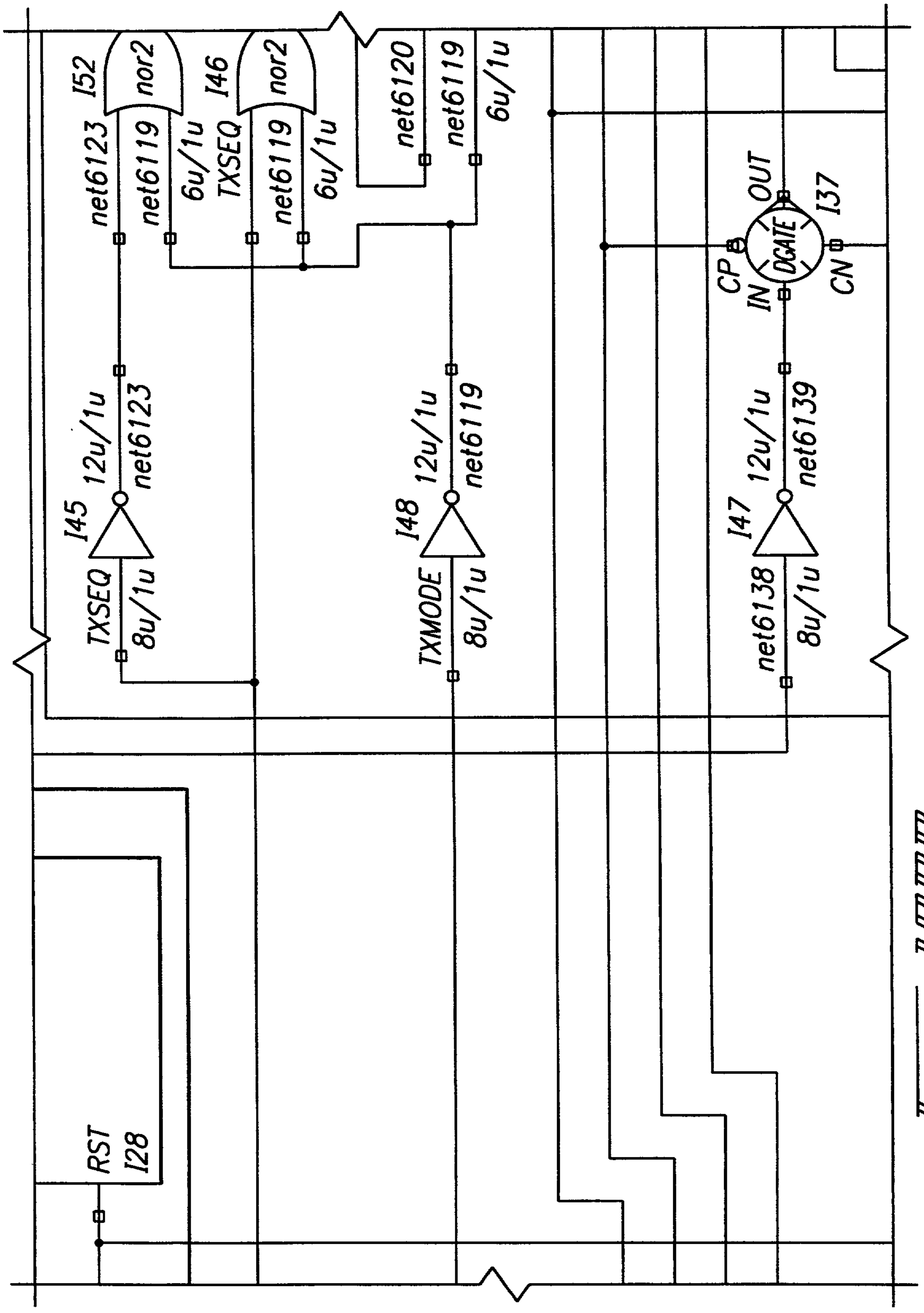

I52
nor2
net6123
net6119
6u/1u
I46
nor2
TXSEQ
net6119
6u/1u
net6120
net6119
6u/1u
OUT
I37
CP
IN
DGATE
CN
I45
12u/1u
net6123
TXSEQ
8u/1u
I48
12u/1u
net6119
TXMODE
8u/1u
I47
12u/1u
net6139
net6138
8u/1u
RST
I28

Fig 10B

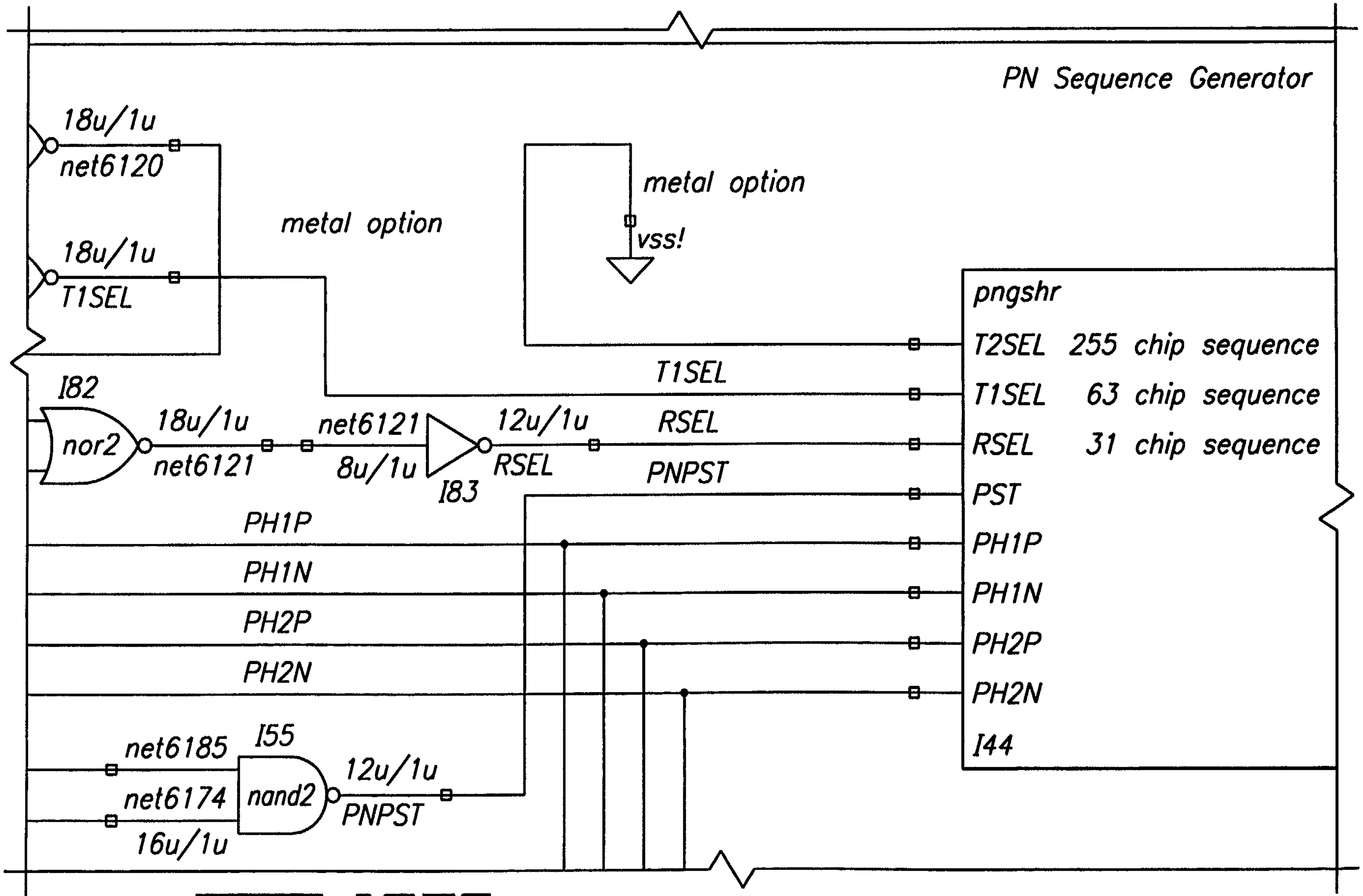

PN Sequence Generator
18u/1u
net6120
18u/1u
T1SEL
metal option
metal option
vss!
pngshr
T2SEL 255 chip sequence
T1SEL 63 chip sequence
RSEL 31 chip sequence
PST
PH1P
PH1N
PH2P
PH2N
I44
T1SEL
I82
nor2
18u/1u
net6121
net6121
8u/1u
I83
12u/1u
RSEL
RSEL
PNPST
PH1P
PH1N
PH2P
PH2N
net6185
net6174
16u/1u
I55
nand2
12u/1u
PNPST

Fig 10BC

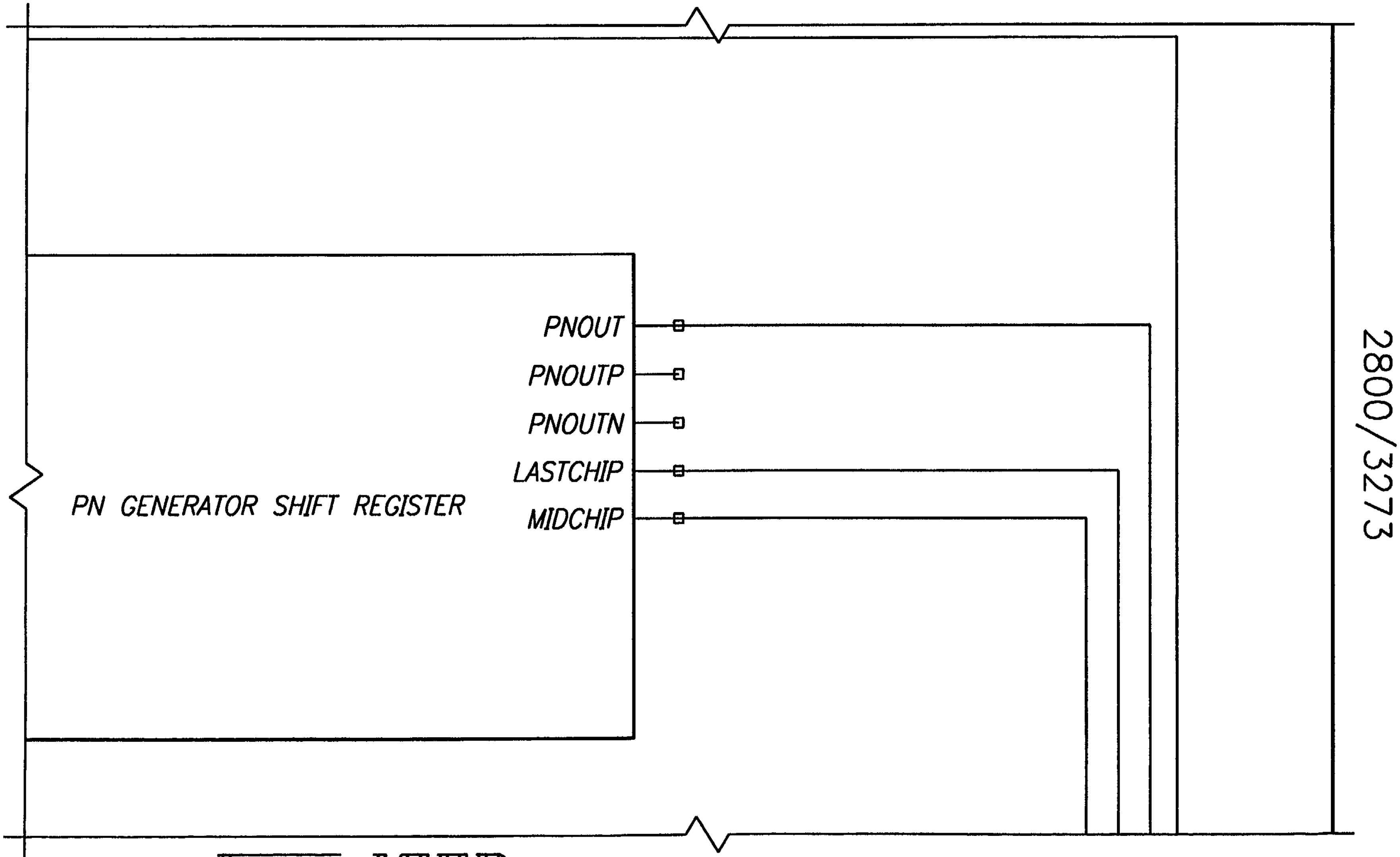

PN GENERATOR SHIFT REGISTER
PNOUT
PNOUTP
PNOUTN
LASTCHIP
MIDCHIP
2800/3273

Fig 10BD

2801/3273

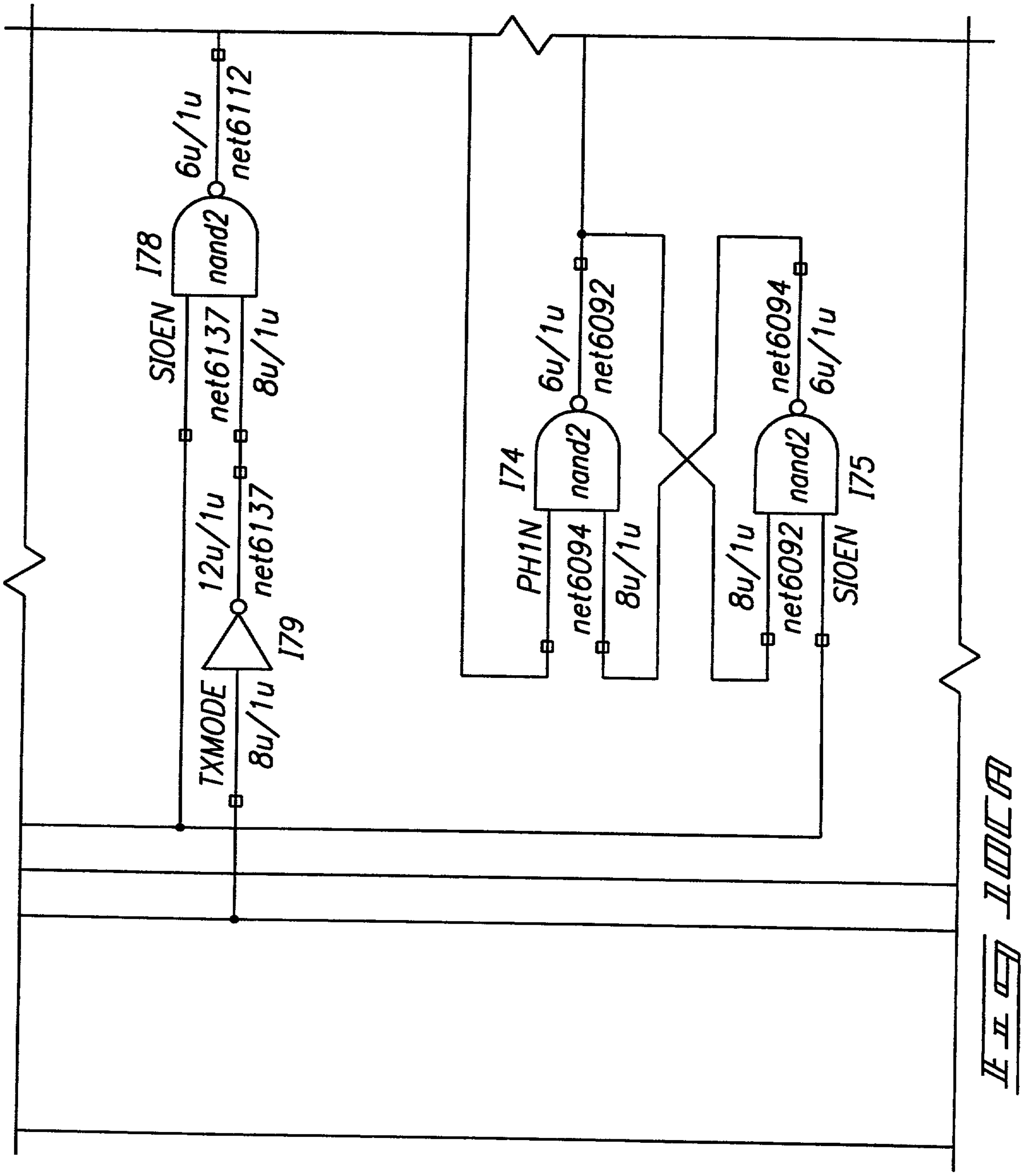


Fig 10CA

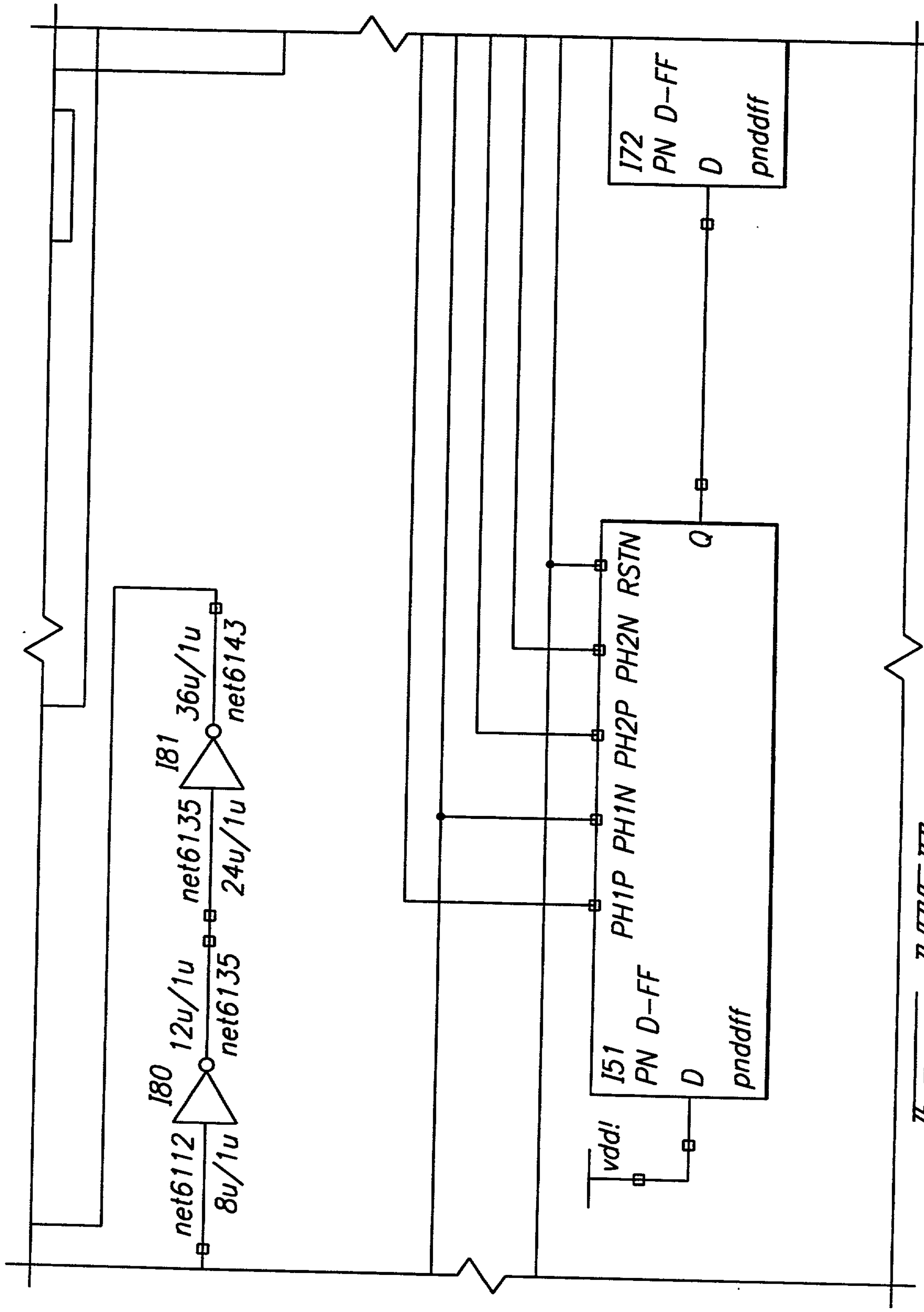

I72
PN D-FF
D
pnddff
Q
RSTN
PH2N
PH2P
PH1N
PH1P
I51
PN D-FF
D
pnddff
vdd!
I81
36u/1u
net6143
net6135
24u/1u
12u/1u
net6135
I80
net6112
8u/1u

Fig. 10CB

2803/3273

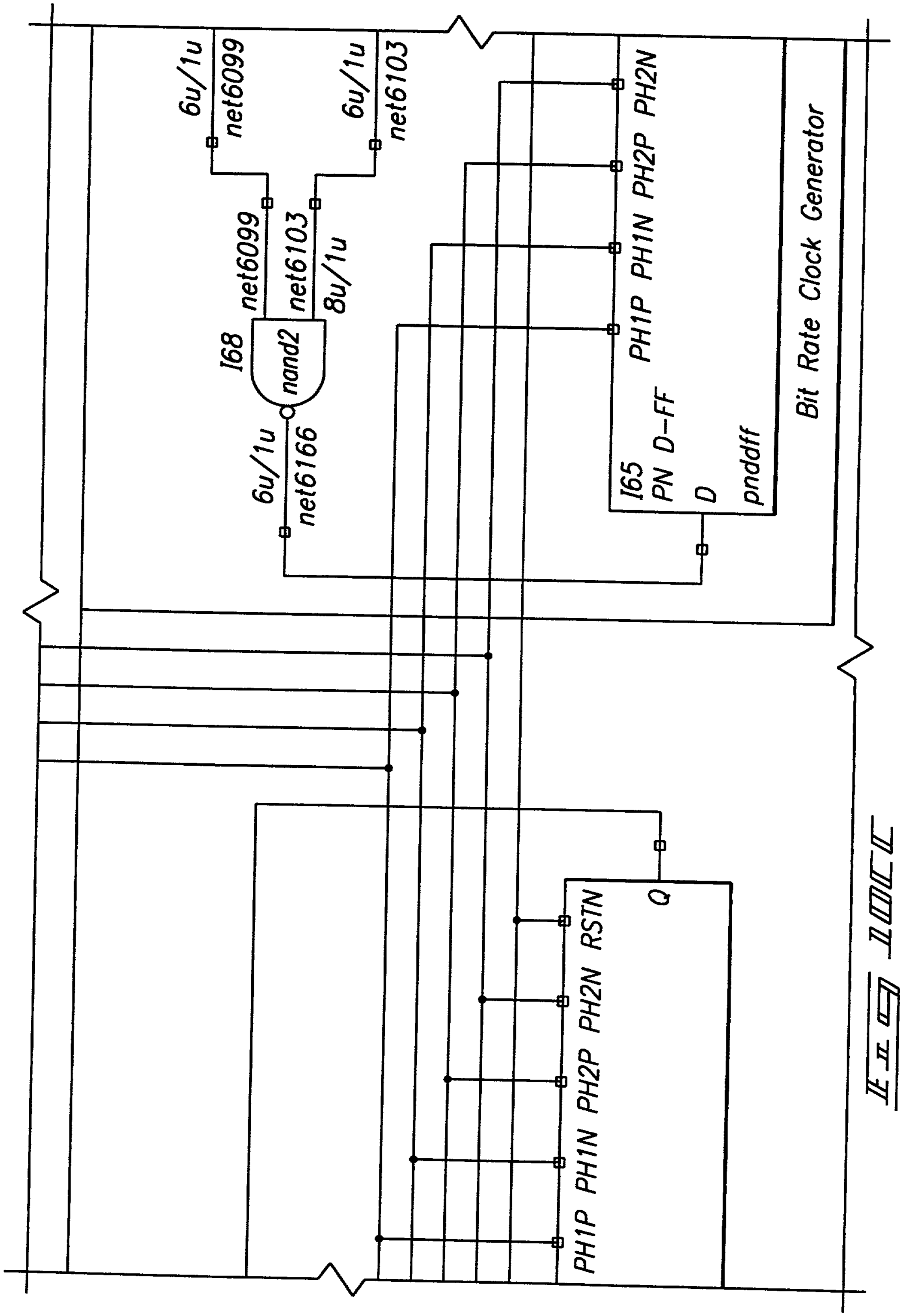


Fig 10CC

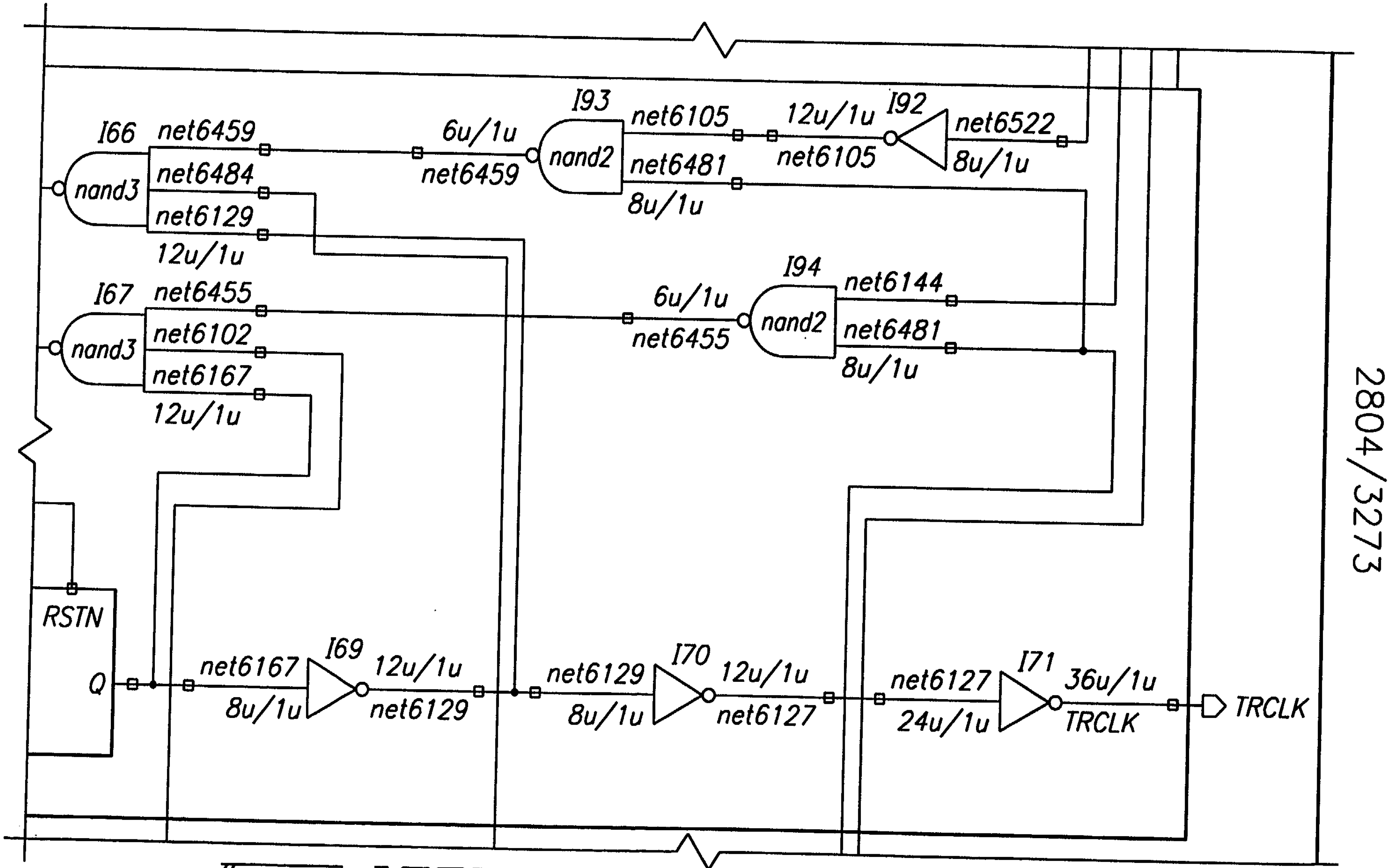

2804/3273
I66
nand3
net6459
net6484
net6129
12u/1u
I67
nand3
net6455
net6102
net6167
12u/1u
I93
nand2
6u/1u
net6459
net6105
net6481
8u/1u
I92
12u/1u
net6105
net6522
8u/1u
I94
nand2
6u/1u
net6455
net6144
net6481
8u/1u
RSTN
Q
I69
net6167
8u/1u
12u/1u
net6129
I70
net6129
8u/1u
12u/1u
net6127
I71
net6127
24u/1u
36u/1u
TRCLK
TRCLK

Fig 10CD

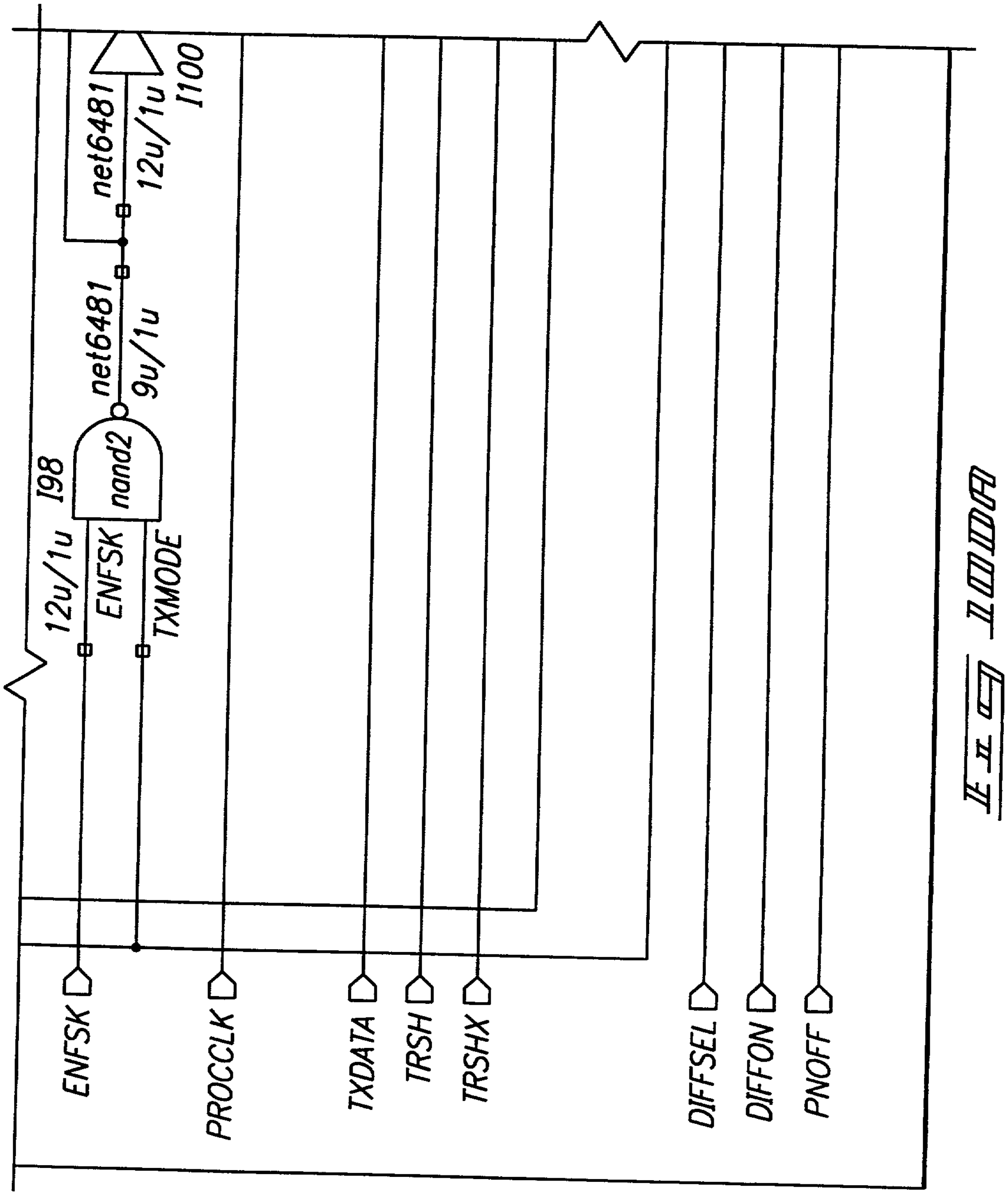

I100
12u/1u
net6481
9u/1u
net6481
nand2
I98
TXMODE
ENFSK
12u/1u
ENFSK
PROCCLK
TXDATA
TRSH
TRSHX
DIFFSEL
DIFFON
PNOFF

Fig 100A

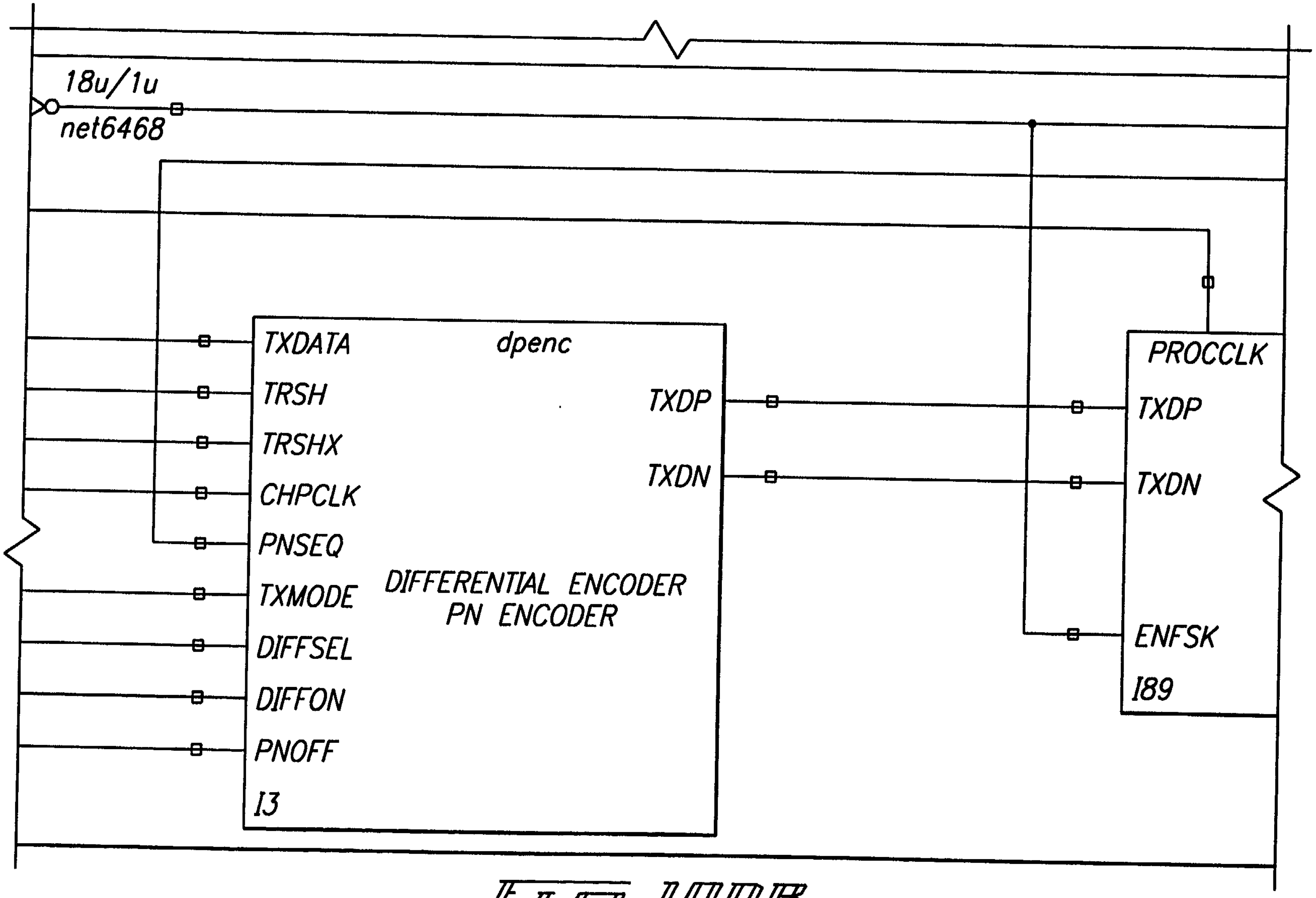

18u/1u
net6468
TXDATA
TRSH
TRSHX
CHPCLK
PNSEQ
TXMODE
DIFFSEL
DIFFON
PNOFF
I3
dpenc
DIFFERENTIAL ENCODER
PN ENCODER
TXDP
TXDN
PROCCLK
TXDP
TXDN
ENFSK
I89

FIG. 100B

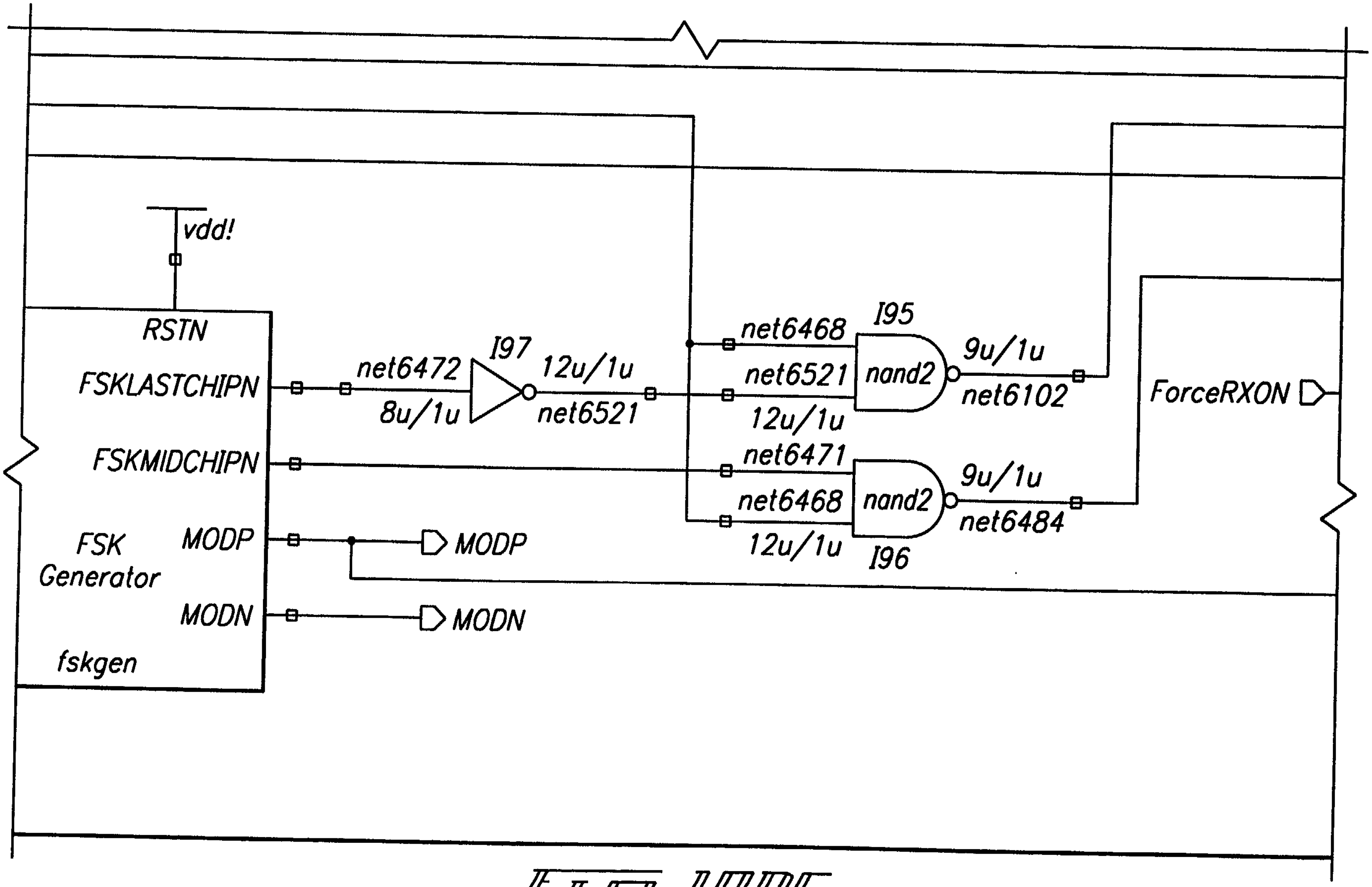
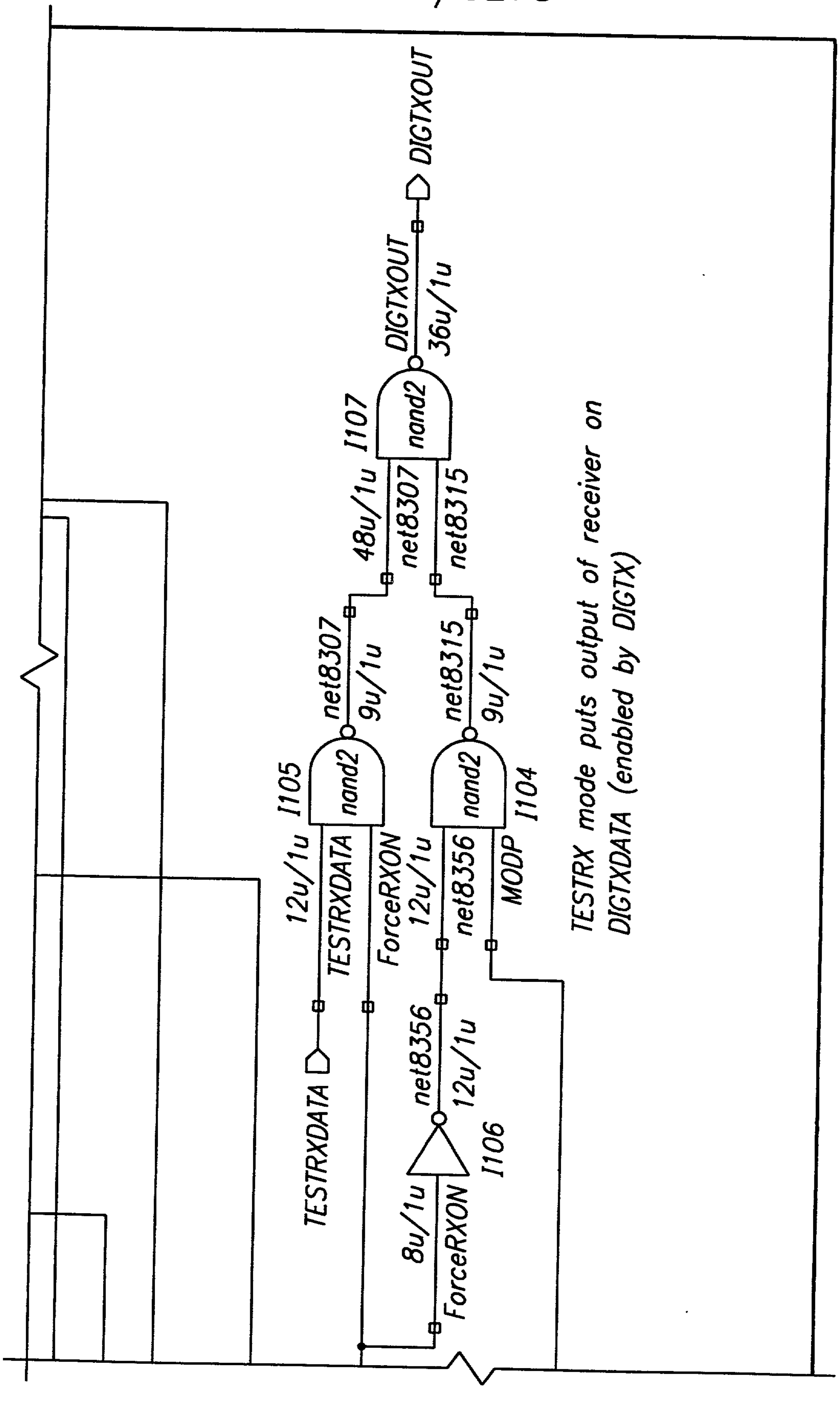

vdd!
RSTN
FSKLASTCHIPN
FSKMIDCHIPN
MODP
MODN
FSK
Generator
fskgen
net6472
8u/1u
I97
12u/1u
net6521
MODP
MODN
net6468
net6521
12u/1u
I95
nand2
9u/1u
net6102
net6471
net6468
12u/1u
nand2
I96
9u/1u
net6484
ForceRXON

Fig 100C



TESTRX mode puts output of receiver on DIGTXDATA (enabled by DIGTX)

Fig. 100D

10.01AA	10.01AB	10.01AC	10.01AD	10.01AE	10.01AF	10.01AG			
10.01BA	10.01BB	10.01BC	10.01BD	10.01BE	10.01BF	10.01BG	10.01BH	10.01BI	10.01BJ
10.01CA	10.01CB	10.01CC	10.01CD	10.01CE	10.01CF	10.01CG	10.01CH	10.01CI	10.01CJ
	10.01DB	10.01DC	10.01DD	10.01DE	10.01DF	10.01DG	10.01DH	10.01DI	10.01DJ

FIG 10.01

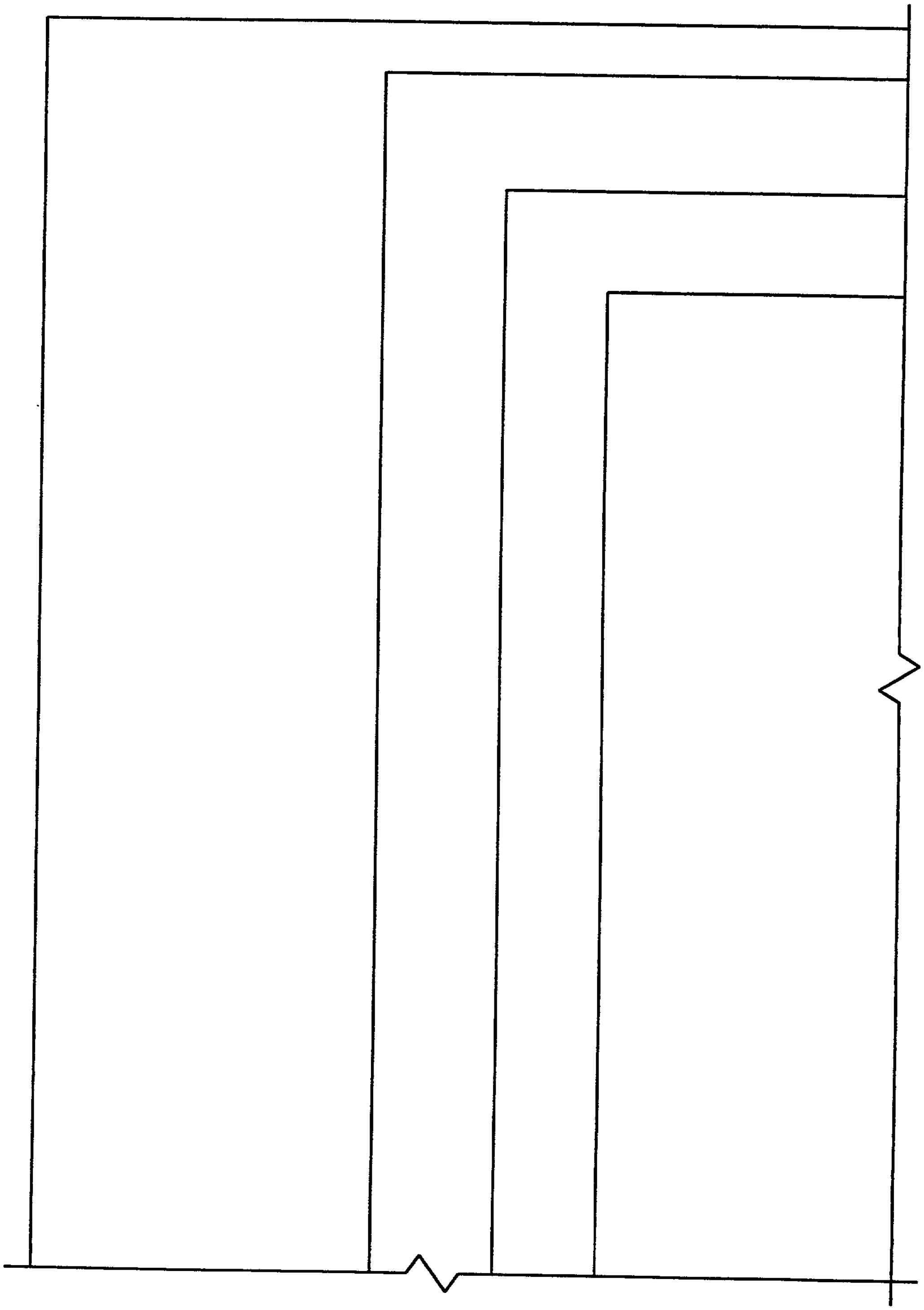


Fig 10.01AA

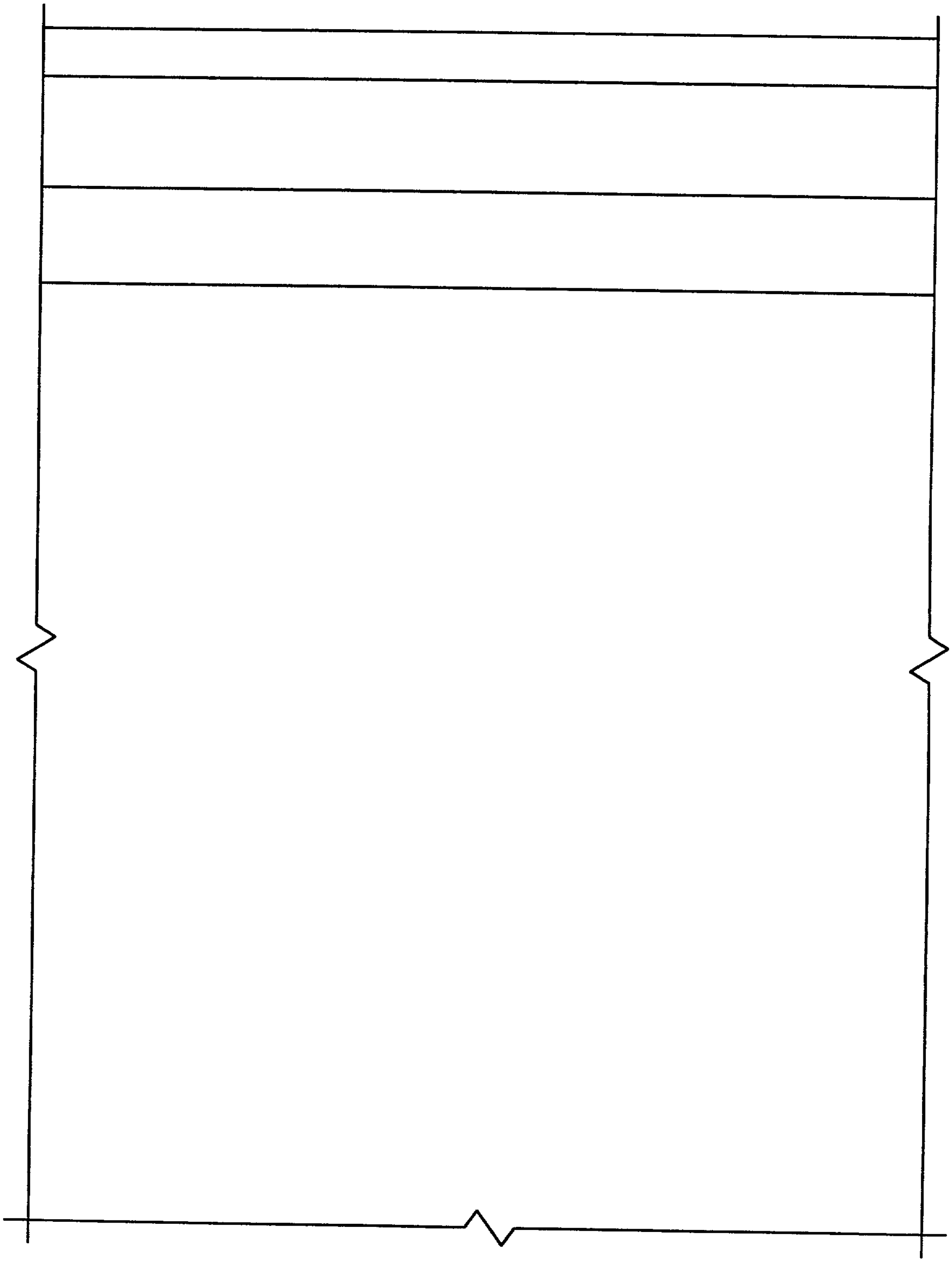


Fig 10.01AB

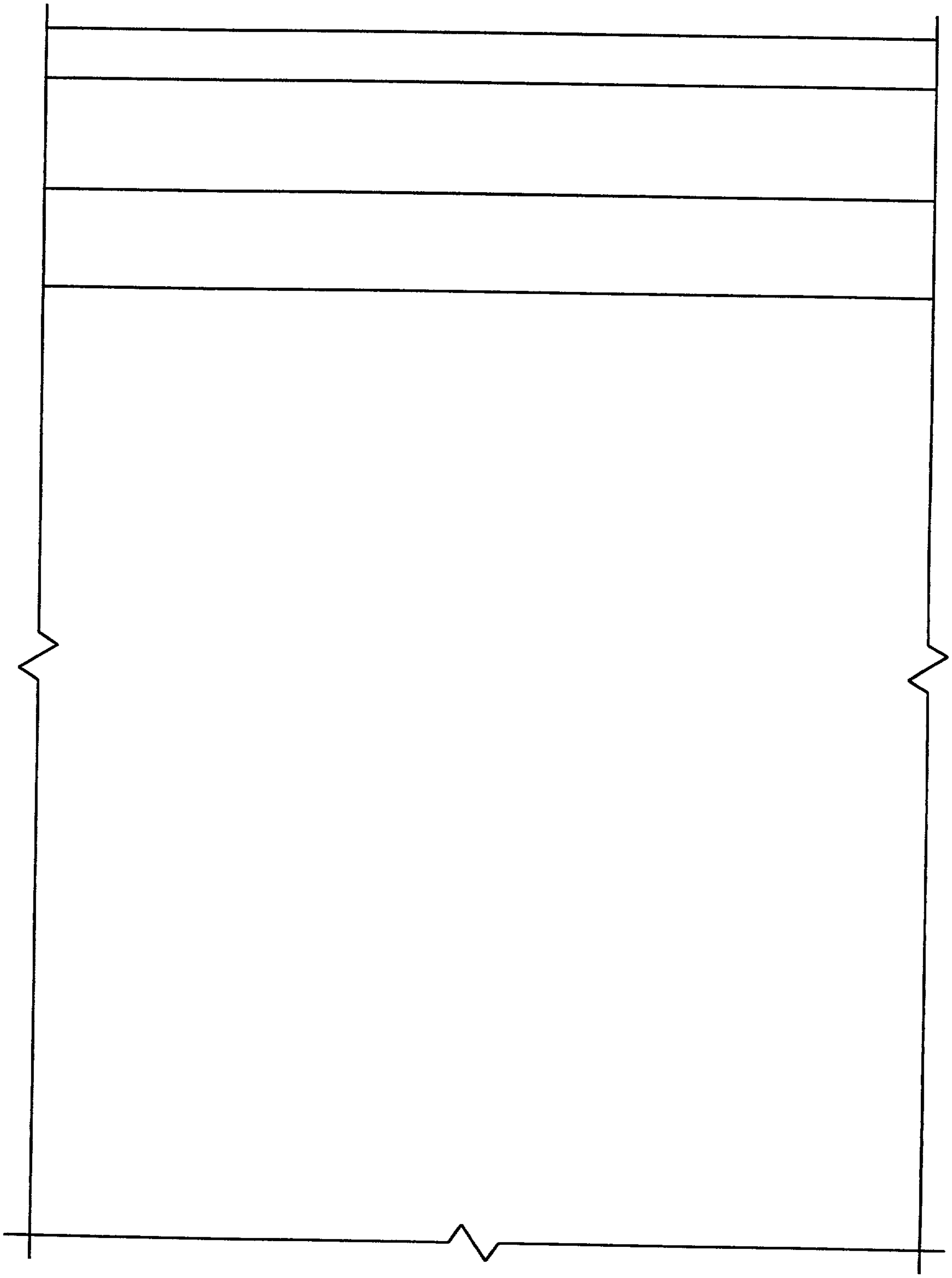


Fig 10.01AC

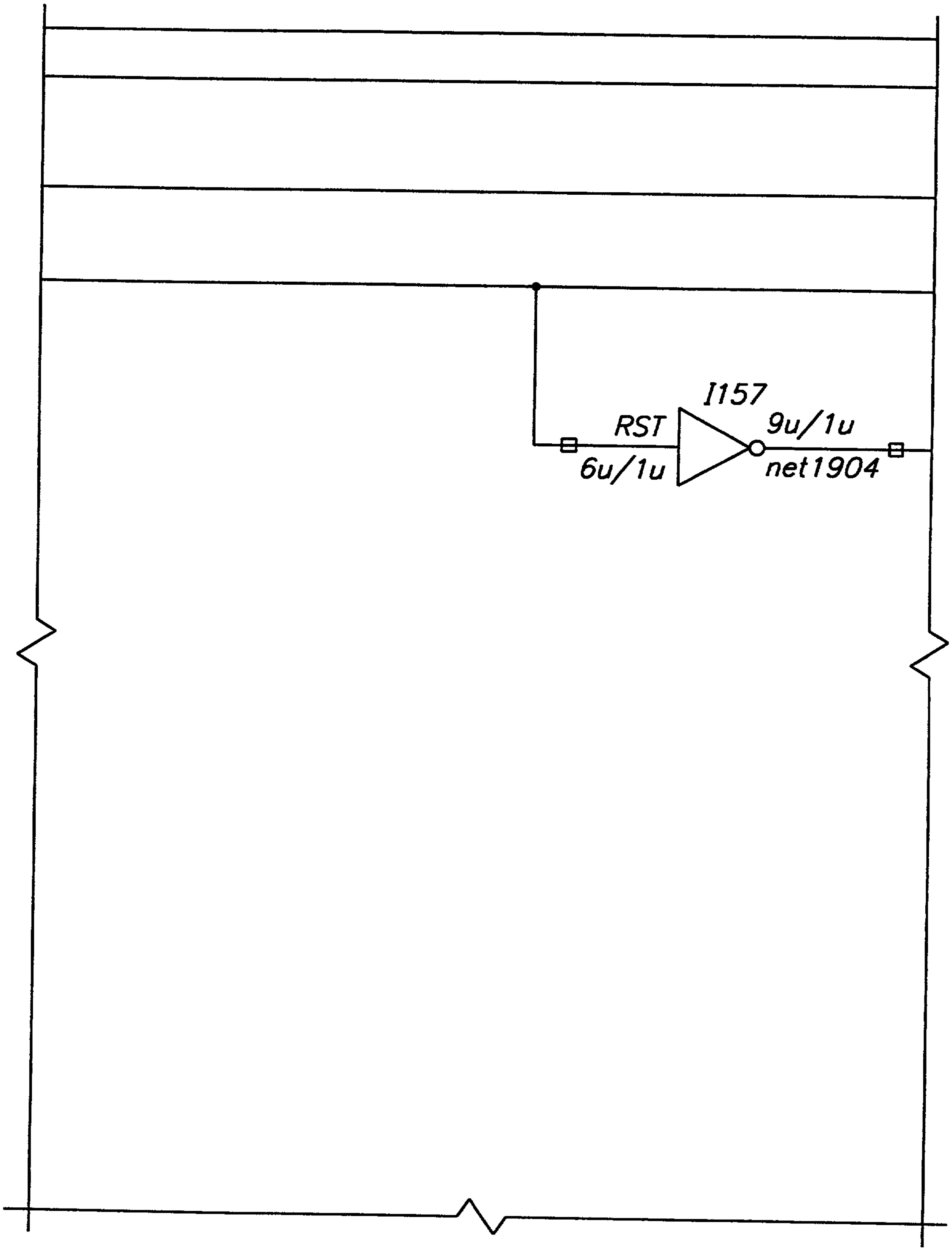


Fig 10.01AD

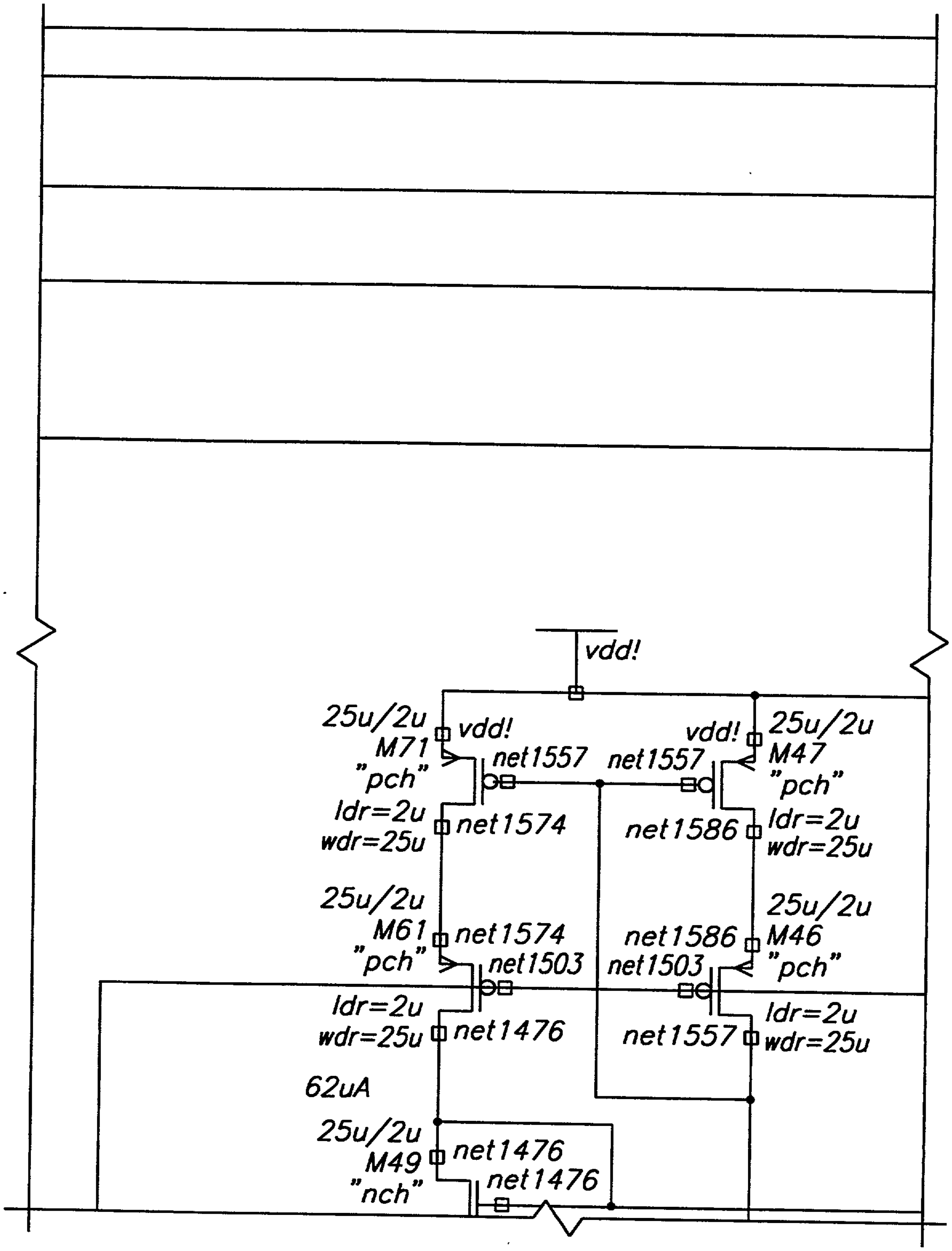

vdd!
25u/2u
M71
"pch"
vdd!
net1557
ldr=2u
wdr=25u
net1574
net1557
vdd!
25u/2u
M47
"pch"
net1586
ldr=2u
wdr=25u
25u/2u
M61
"pch"
net1574
net1503
ldr=2u
wdr=25u
net1476
net1586
net1503
25u/2u
M46
"pch"
net1557
ldr=2u
wdr=25u
62uA
25u/2u
M49
"nch"
net1476
net1476

Fig 10.01AE

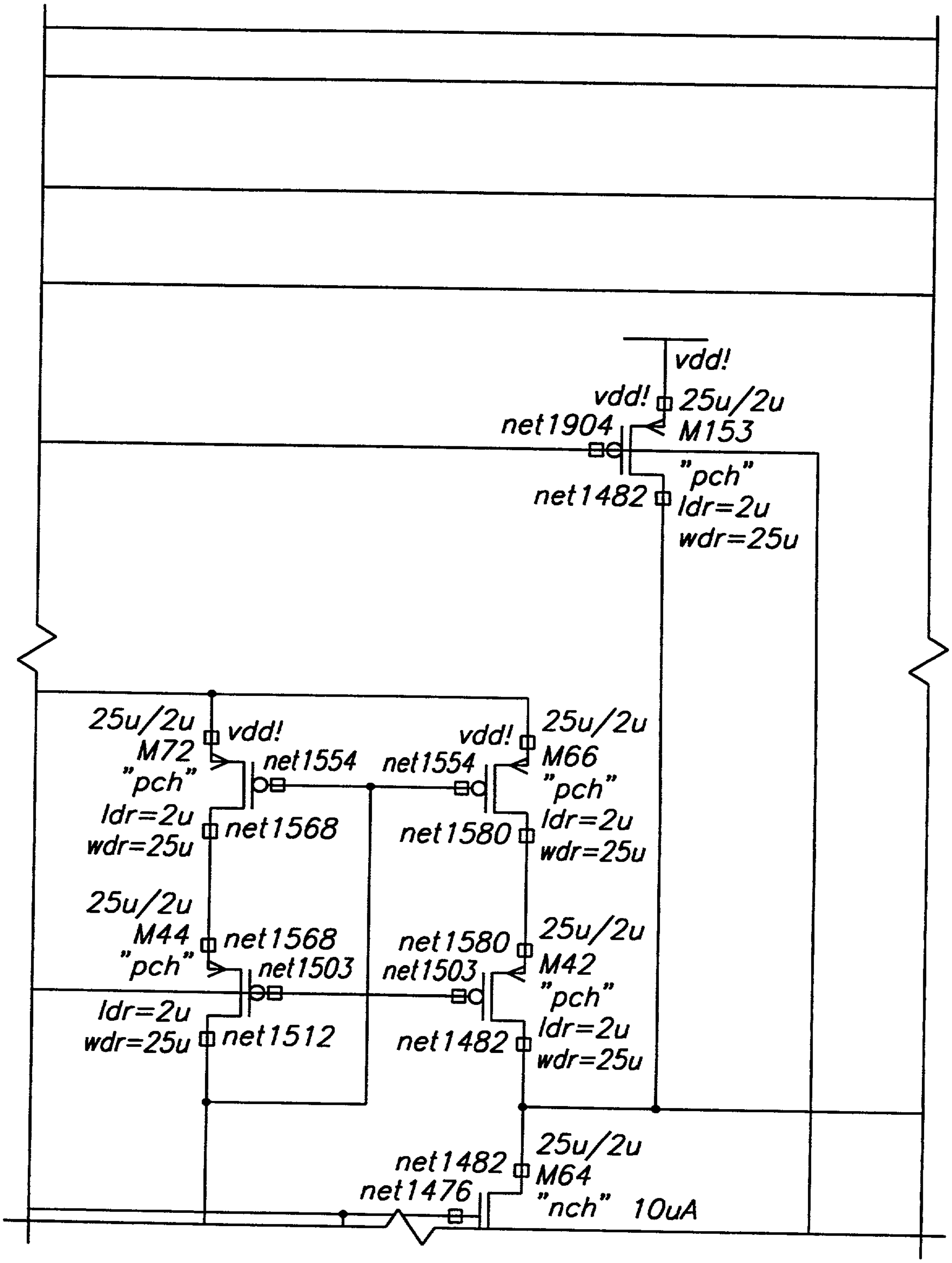

vdd!
vdd!
25u/2u
M153
net1904
"pch"
net1482
ldr=2u
wdr=25u
25u/2u
M72
vdd!
net1554
"pch"
ldr=2u
net1568
wdr=25u
net1554
vdd!
25u/2u
M66
"pch"
net1580
ldr=2u
wdr=25u
25u/2u
M44
net1568
"pch"
net1503
ldr=2u
wdr=25u
net1512
net1580
net1503
25u/2u
M42
"pch"
ldr=2u
net1482
wdr=25u
25u/2u
net1482
M64
net1476
"nch"
10uA

Fig 10.01AF

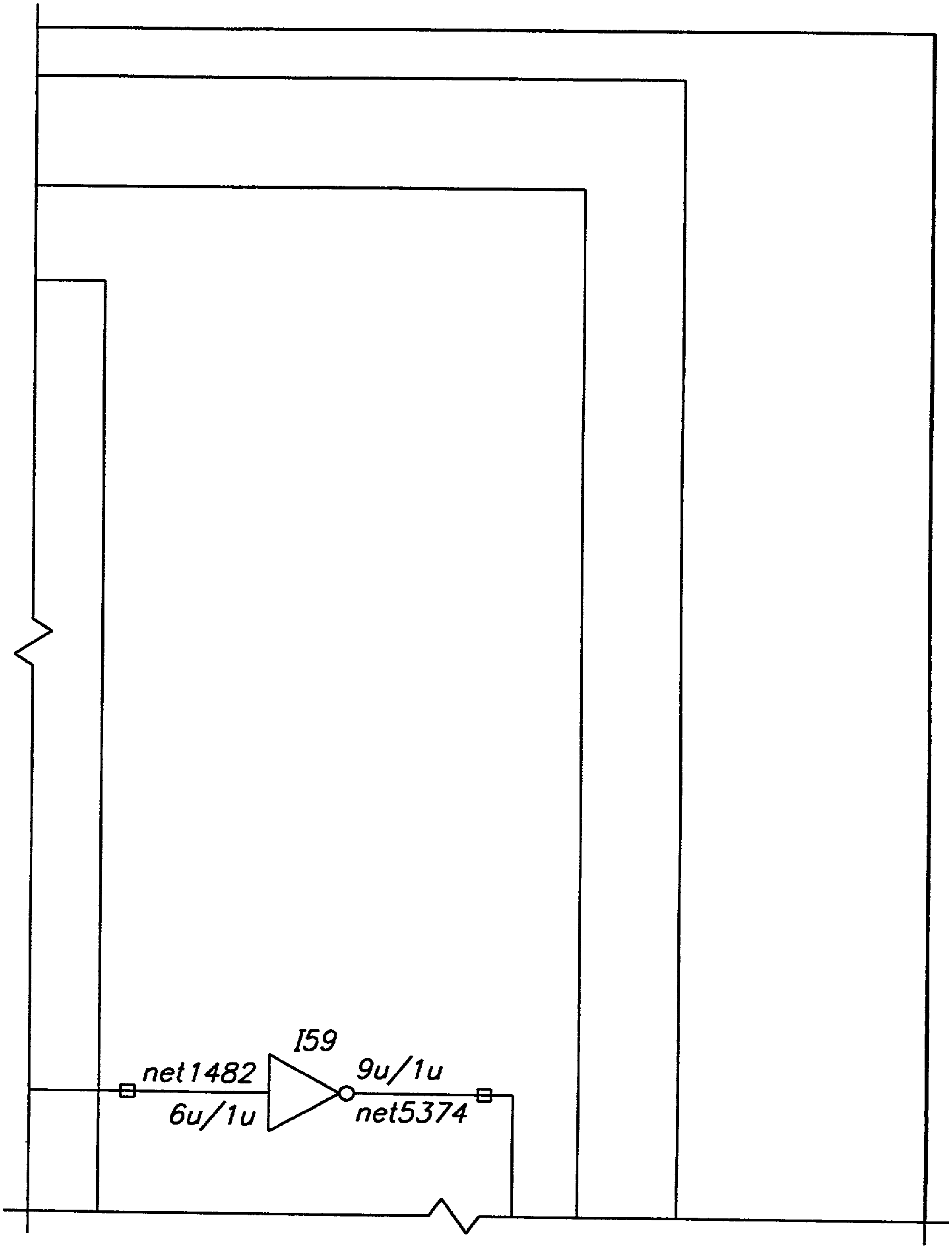


Fig 10.01AG

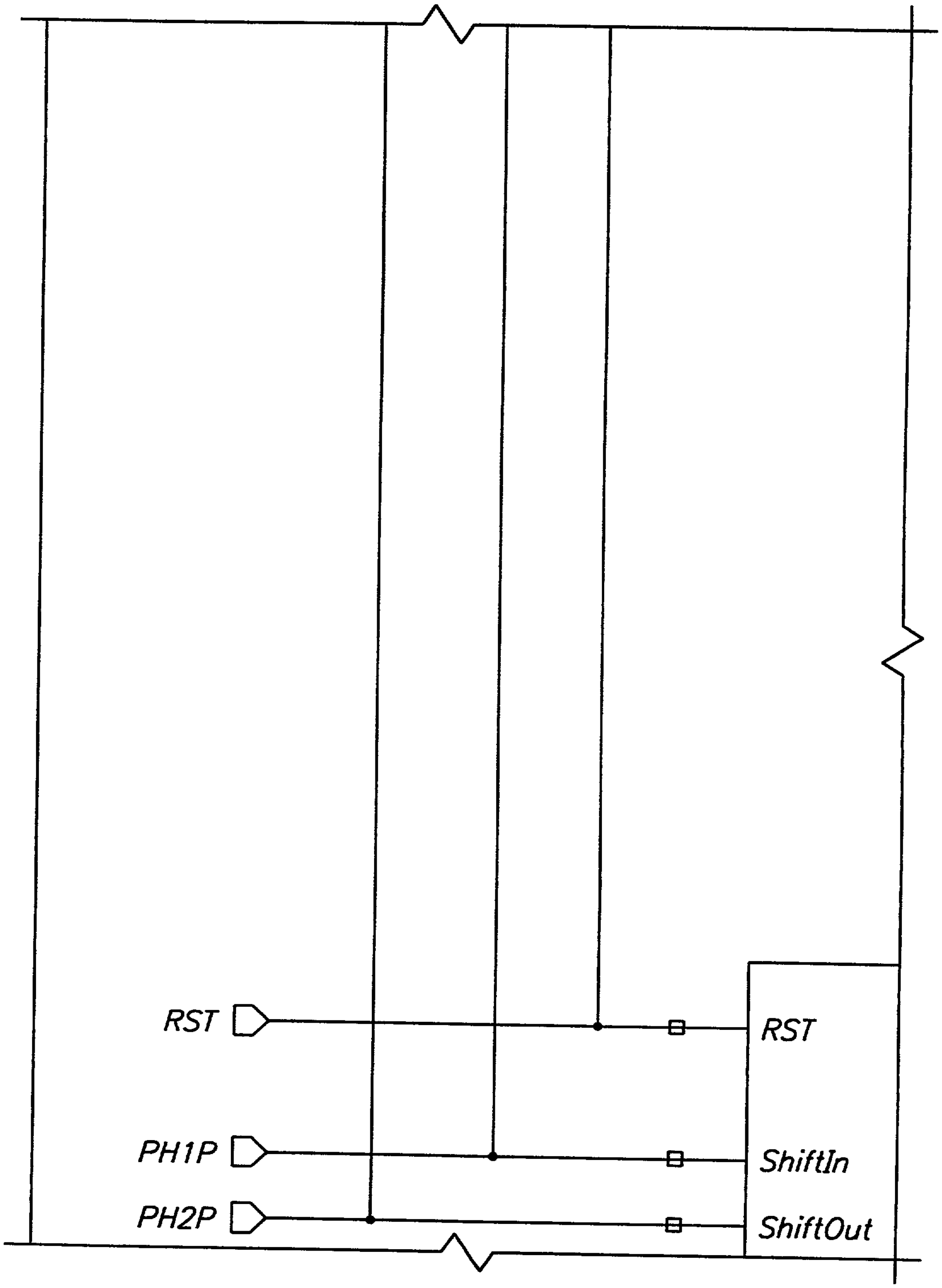


Fig 10.01BA

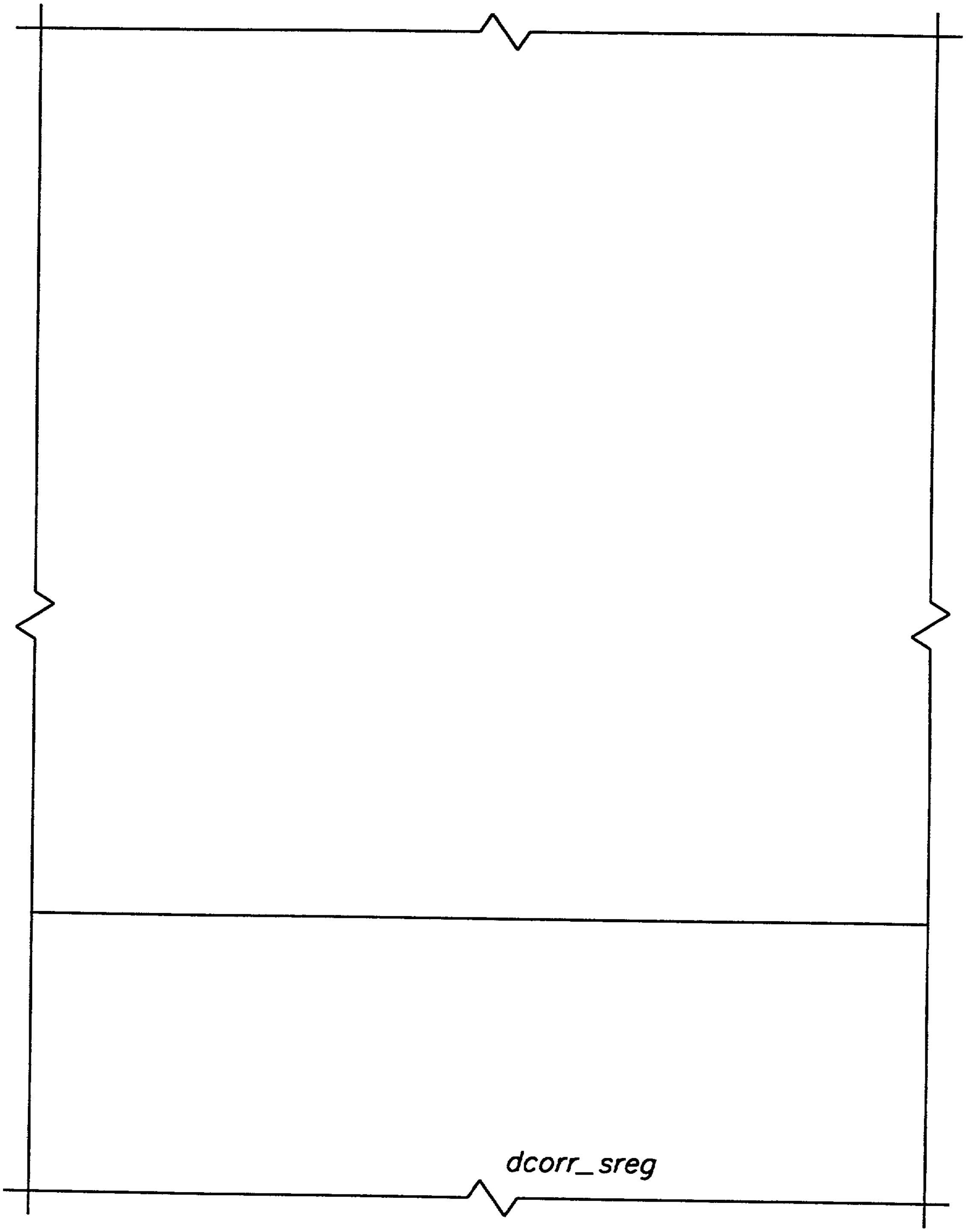


Fig 10.01BB

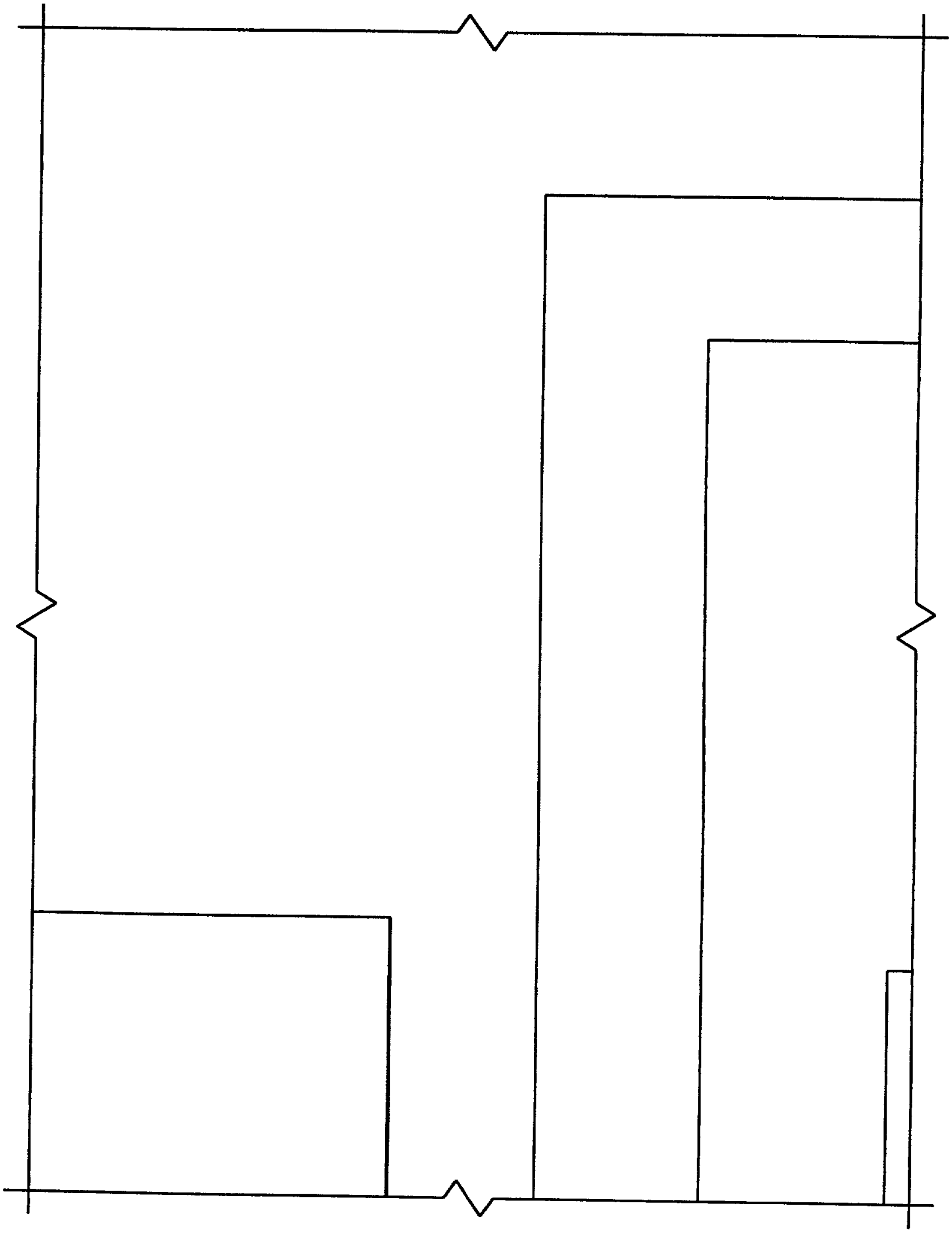


Fig 10.01BC

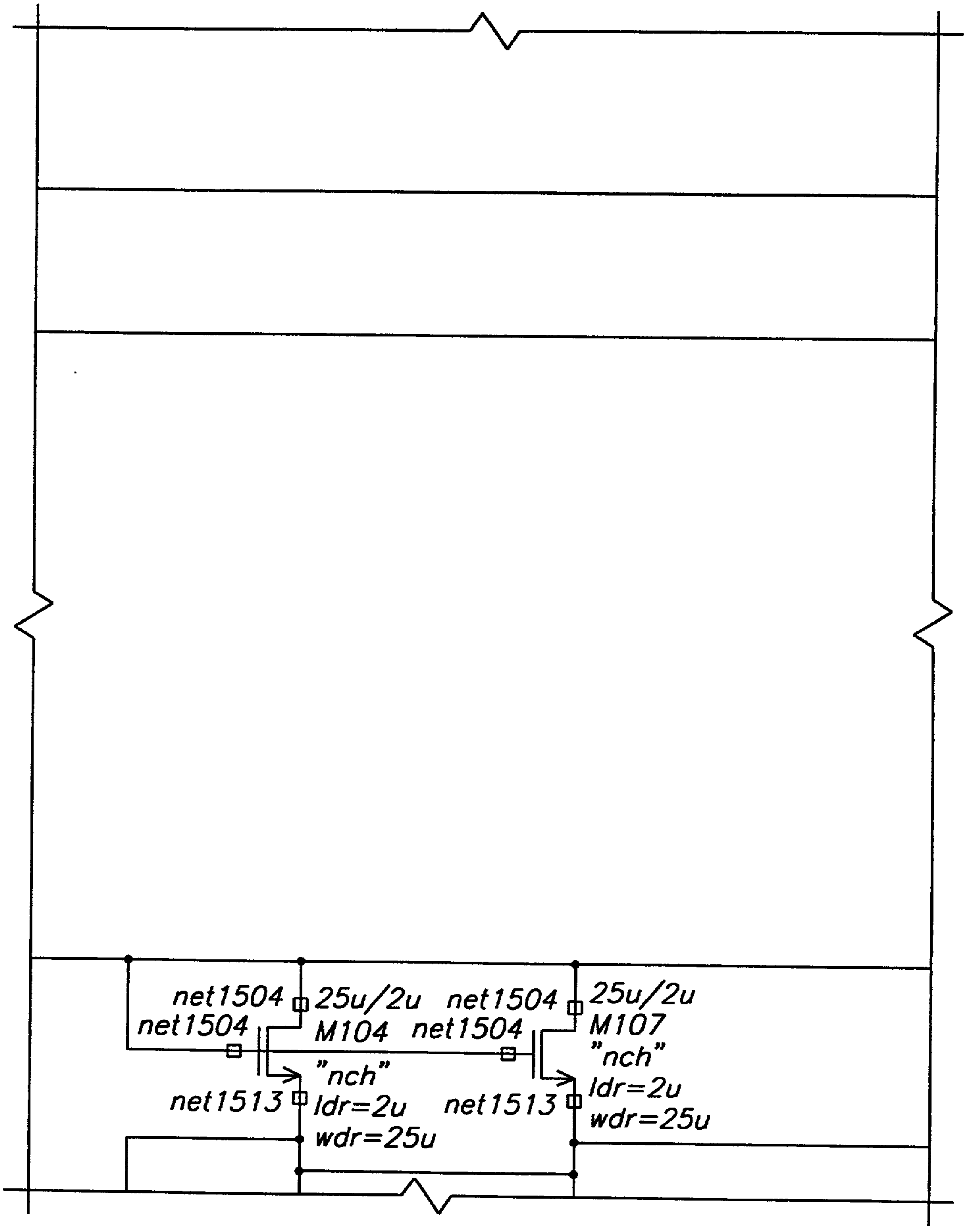

net1504
25u/2u
net1504
M104
"nch"
net1513
ldr=2u
wdr=25u
net1504
25u/2u
net1504
M107
"nch"
net1513
ldr=2u
wdr=25u

Fig 10.01BD

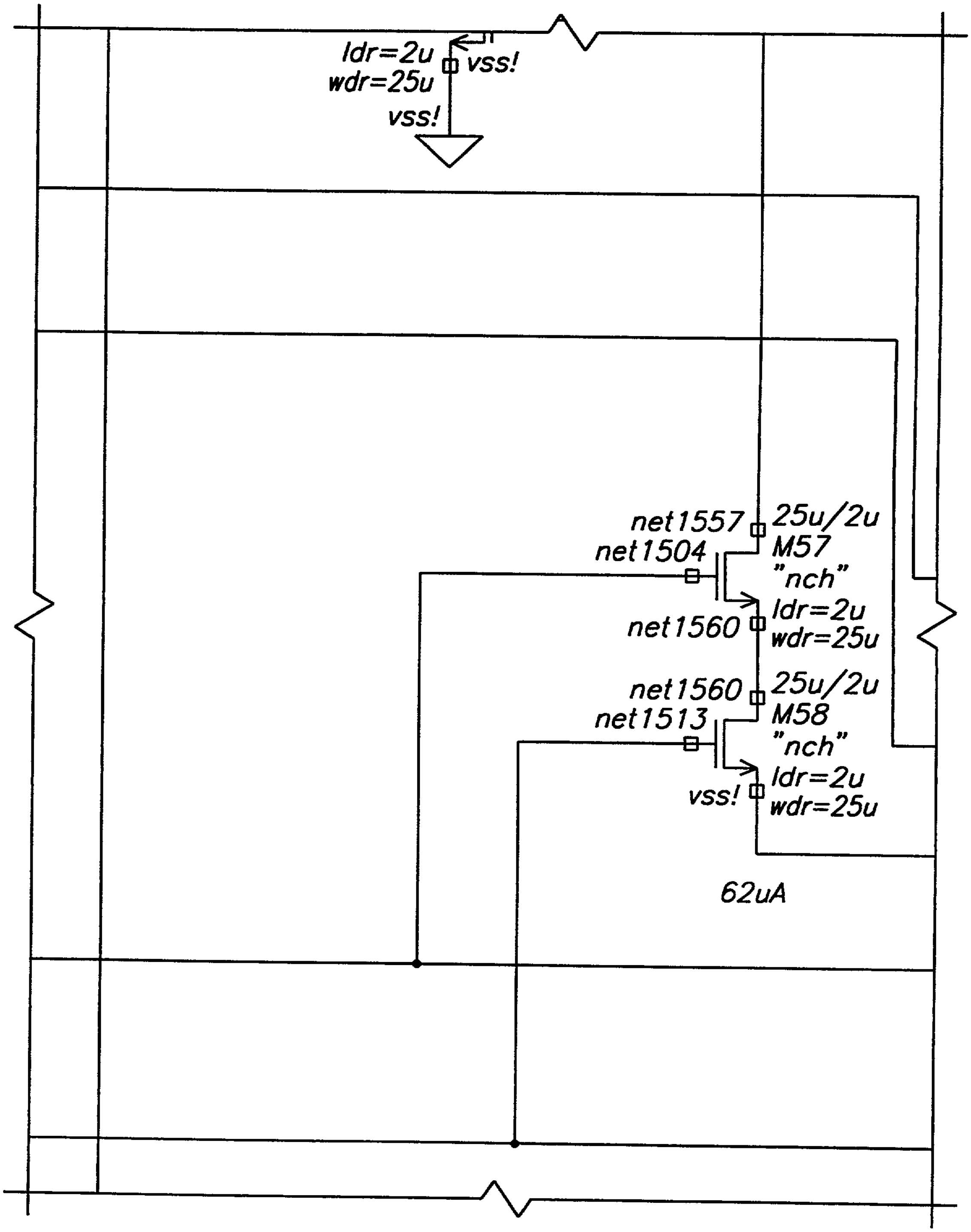

ldr=2u
wdr=25u
vss!
vss!
net1557
net1504
25u/2u
M57
"nch"
ldr=2u
wdr=25u
net1560
net1560
net1513
25u/2u
M58
"nch"
ldr=2u
wdr=25u
vss!
62uA

Fig 10.01BE

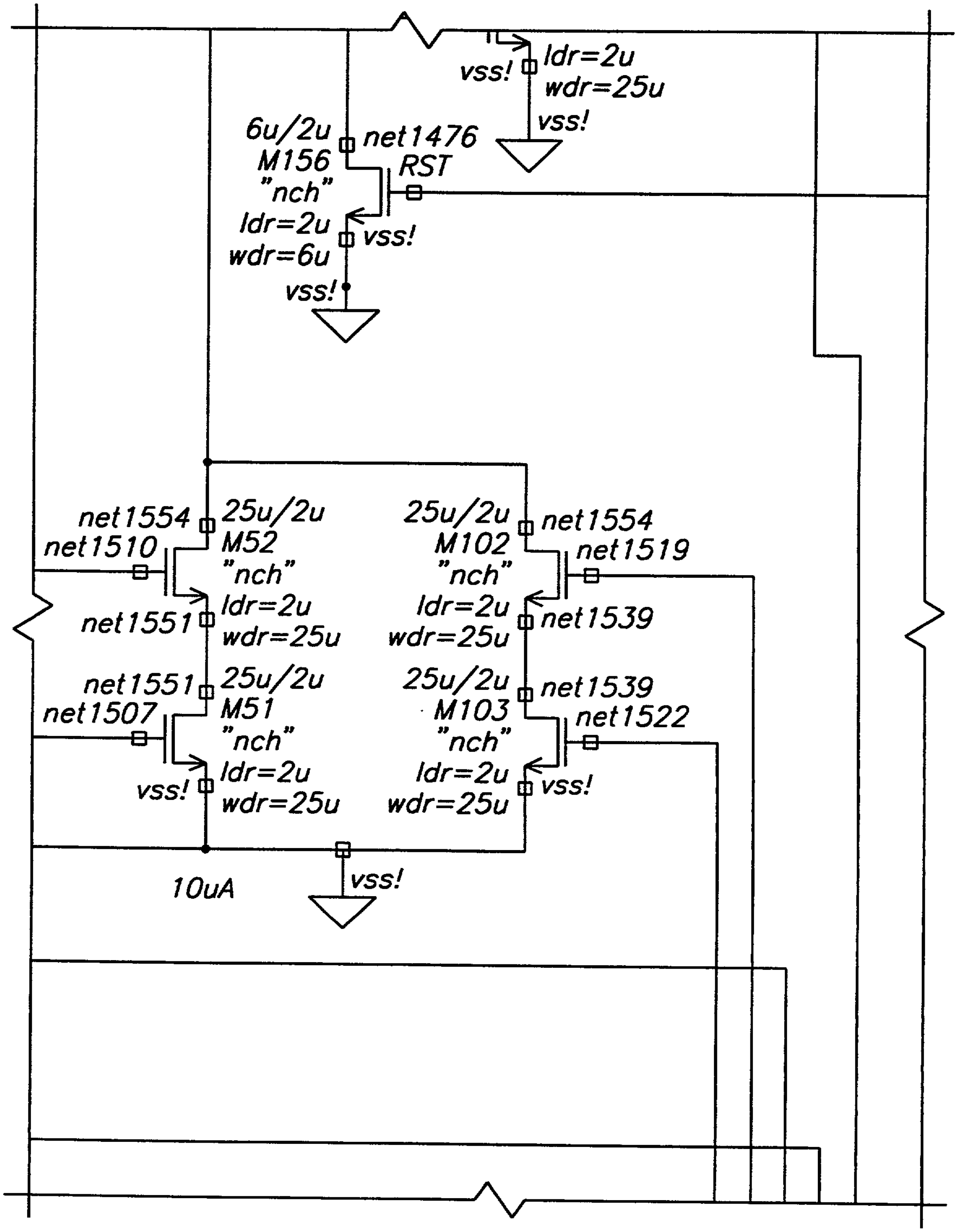

vss!
ldr=2u
wdr=25u
vss!
6u/2u
M156
"nch"
ldr=2u
wdr=6u
vss!
net1476
RST
vss!
net1554
net1510
25u/2u
M52
"nch"
ldr=2u
wdr=25u
net1551
net1551
net1507
25u/2u
M51
"nch"
ldr=2u
wdr=25u
vss!
25u/2u
M102
"nch"
ldr=2u
wdr=25u
net1554
net1519
net1539
25u/2u
M103
"nch"
ldr=2u
wdr=25u
net1539
net1522
vss!
10uA
vss!

Fig 10.01BF

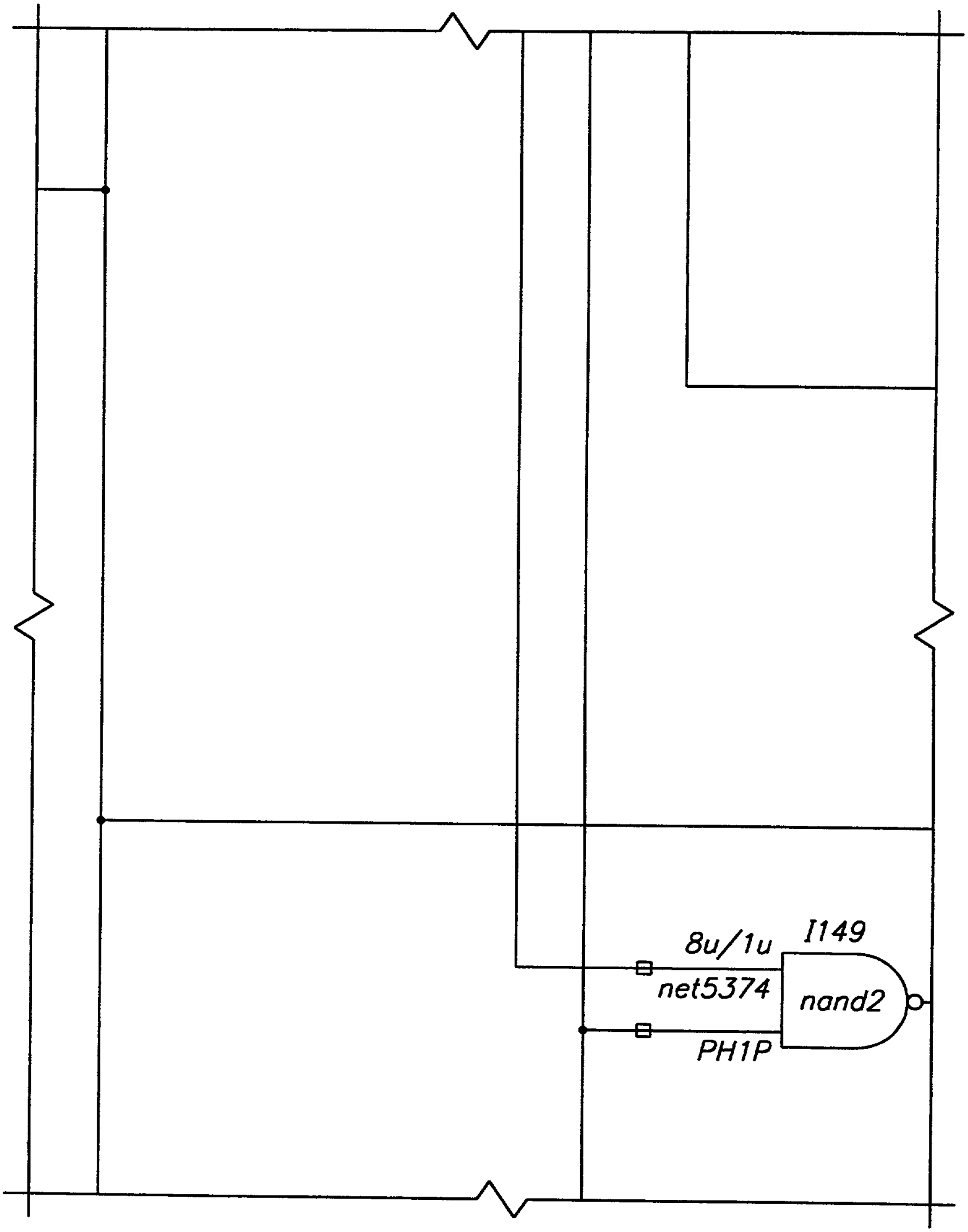


Fig 10.01BG

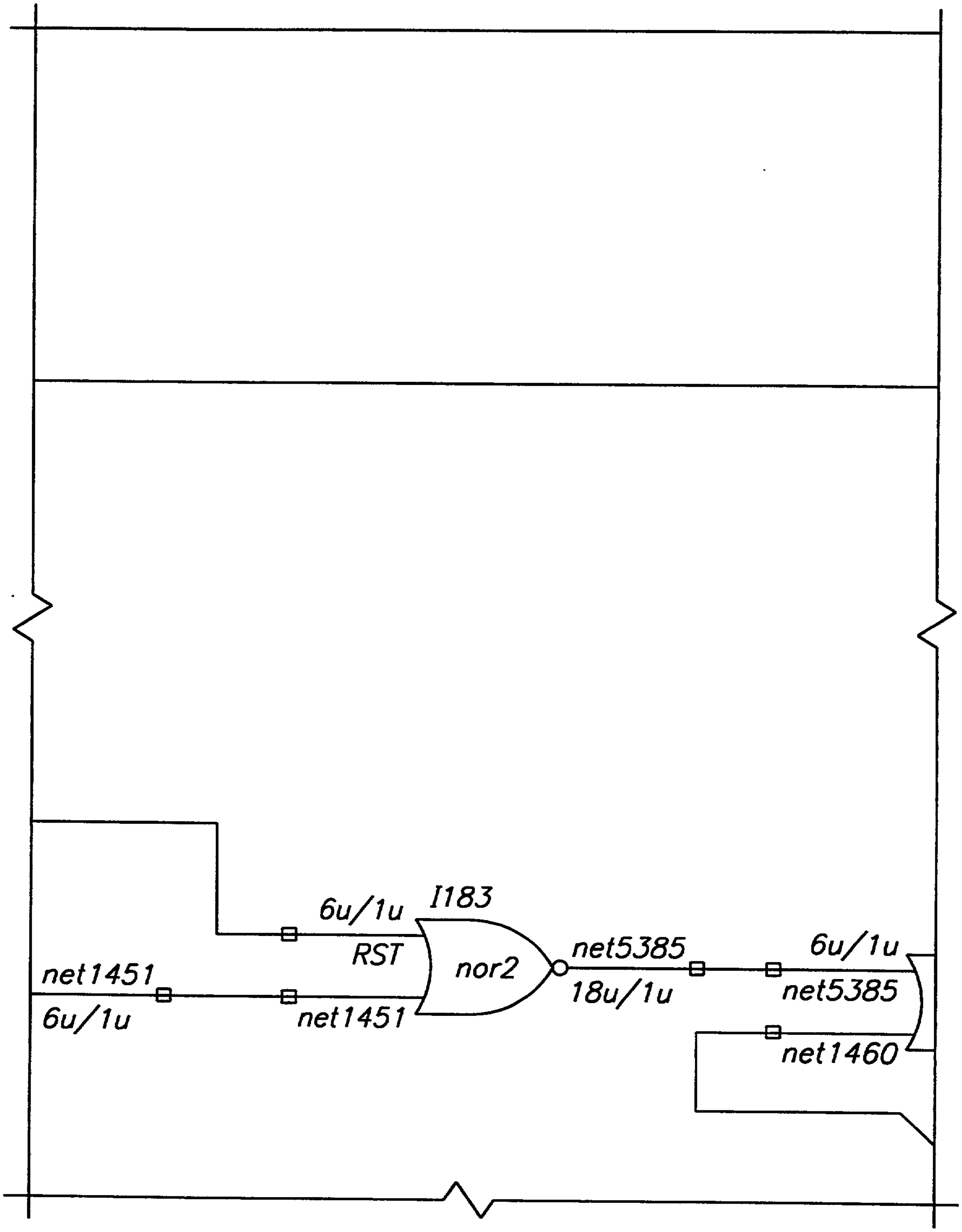

I183
6u/1u
RST
nor2
net5385
18u/1u
net1451
6u/1u
net1451
6u/1u
net5385
net1460

Fig 10.01BH

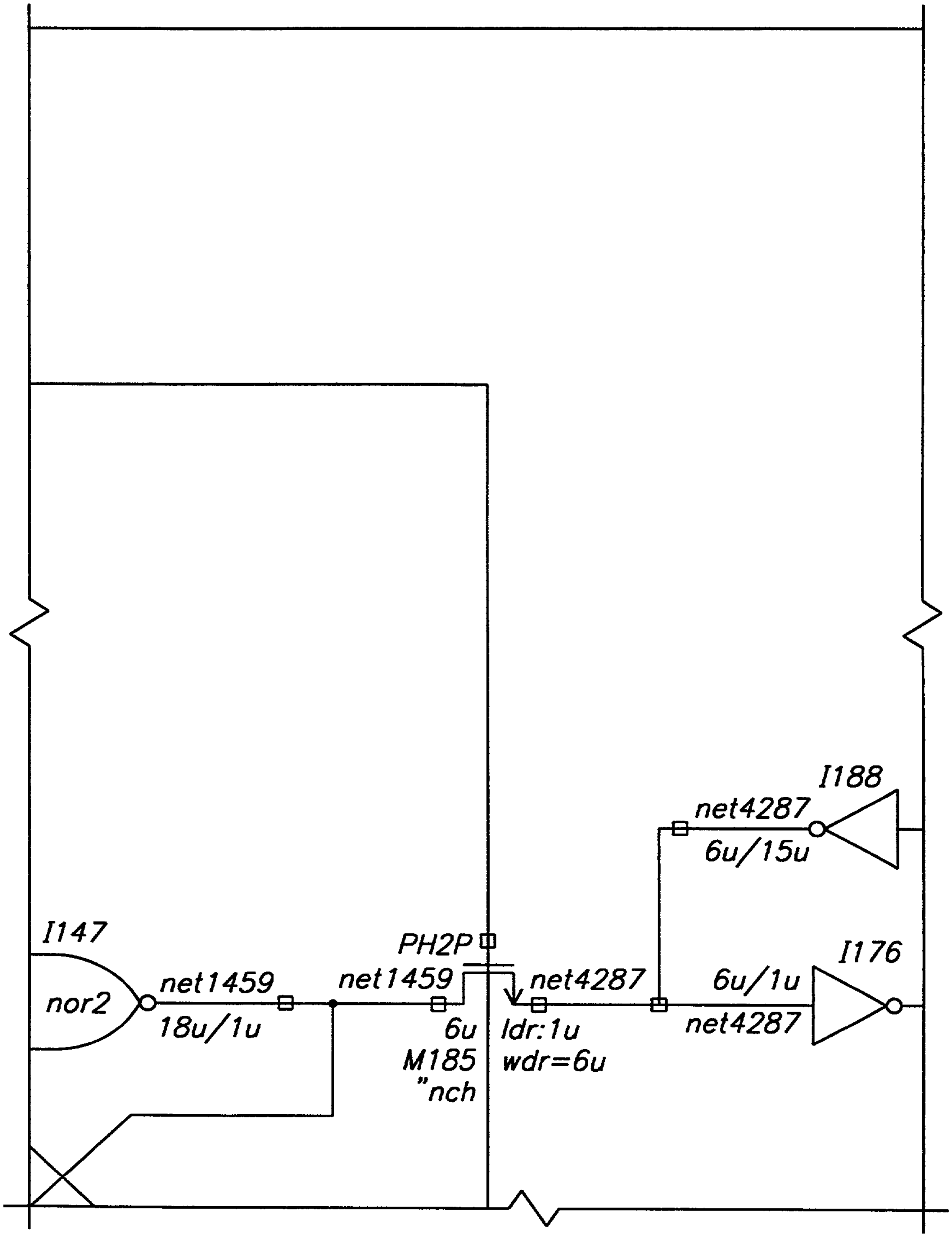

I188
net4287
6u/15u
I147
nor2
net1459
18u/1u
PH2P
net1459
6u
M185
"nch
net4287
ldr:1u
wdr=6u
6u/1u
I176
net4287

Fig 10.01B1

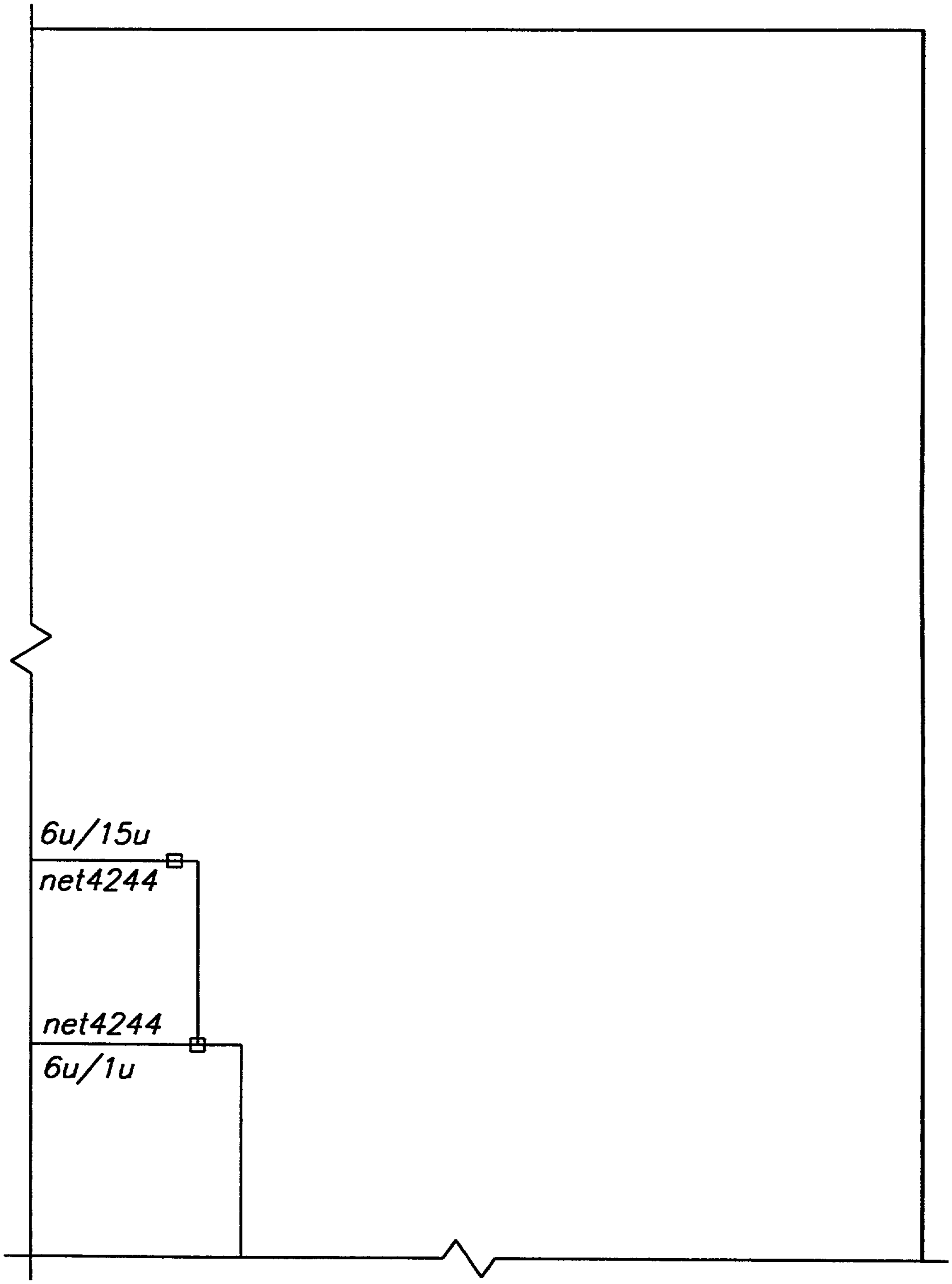


Fig 10.01B.1

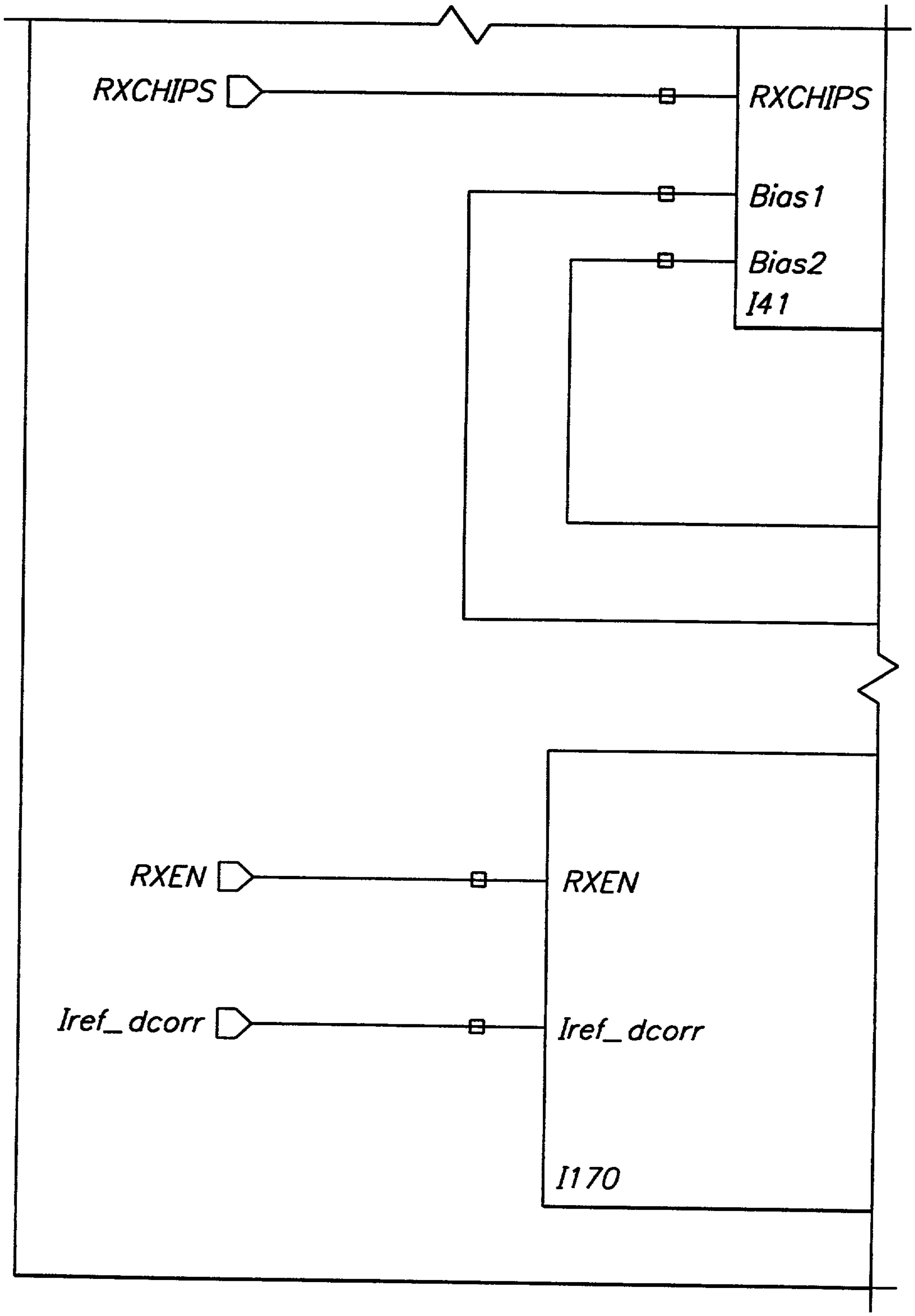

RXCHIPS
RXCHIPS
Bias1
Bias2
I41
RXEN
RXEN
Iref_dcorr
Iref_dcorr
I170

Fig 10.01CA

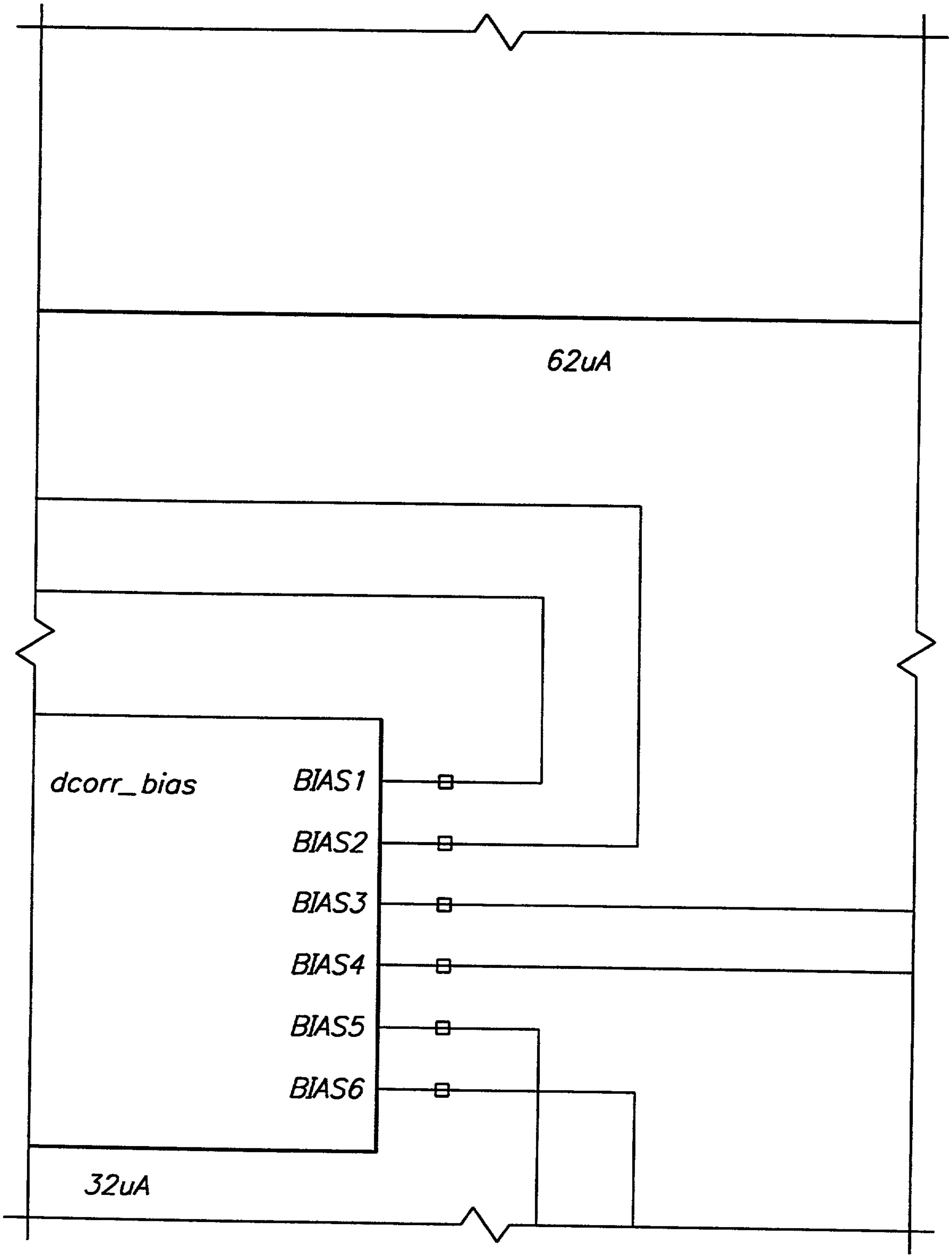


FIG 10.01CB

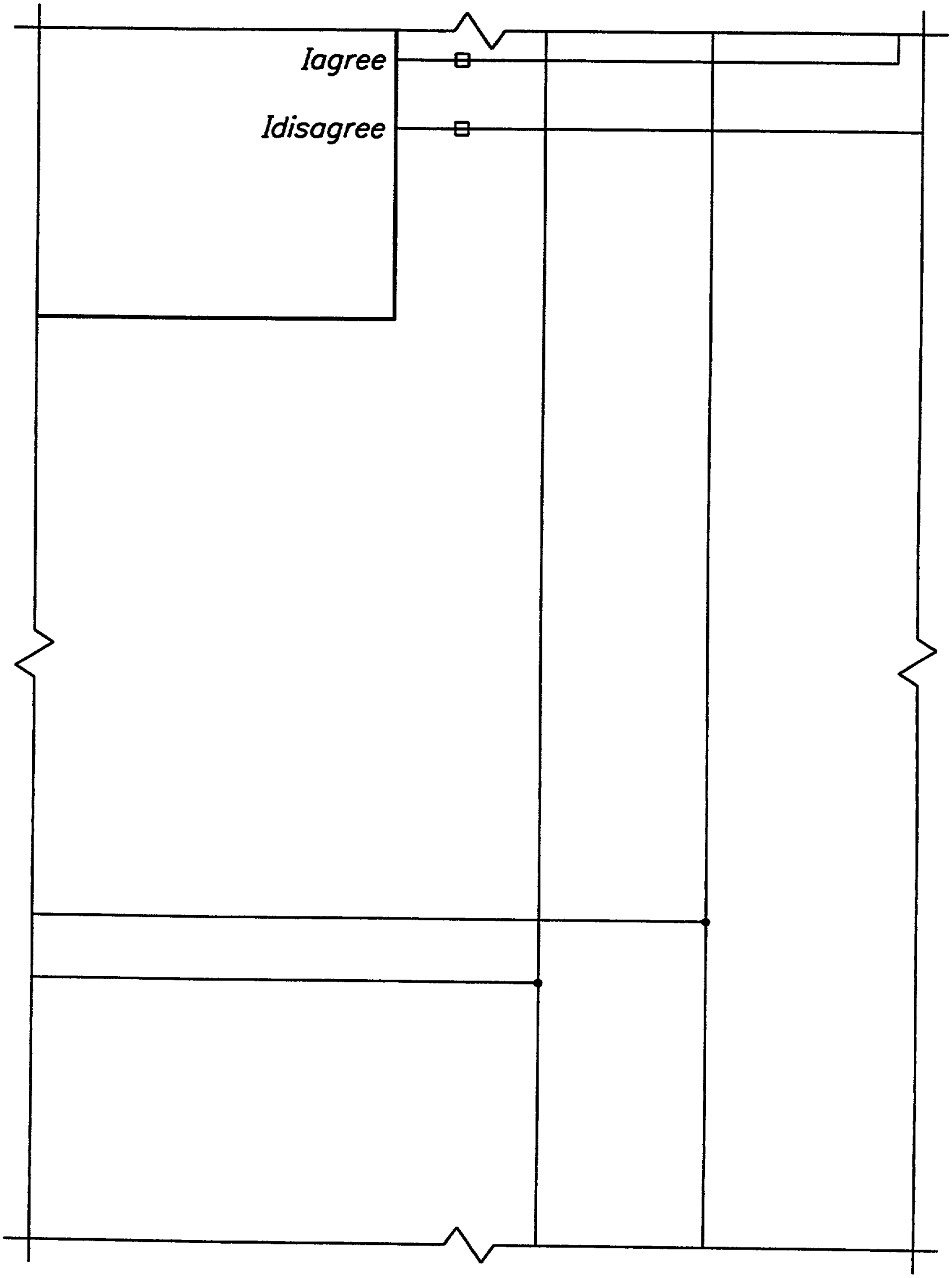


Fig 10.01CC

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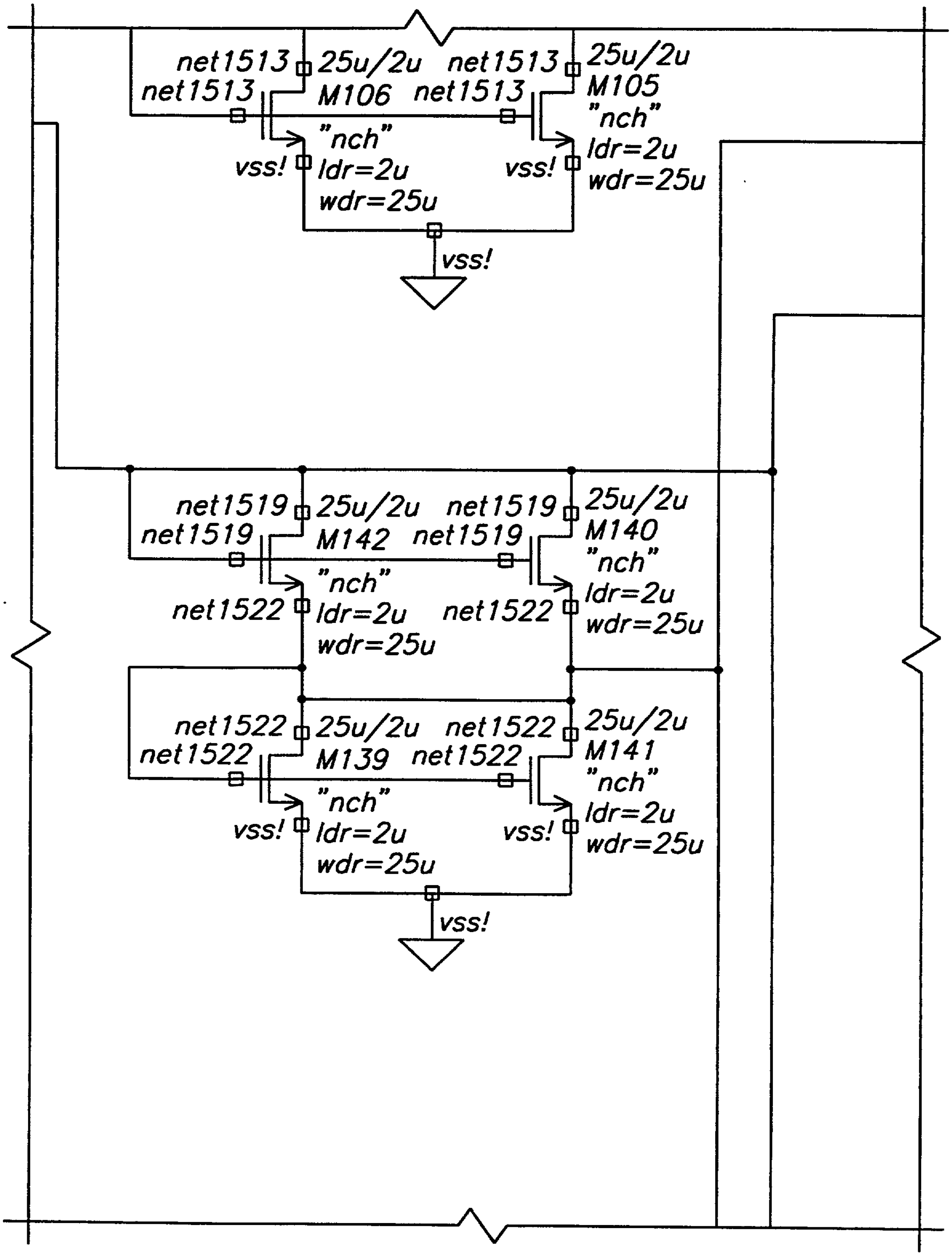

Fig 10.01CD

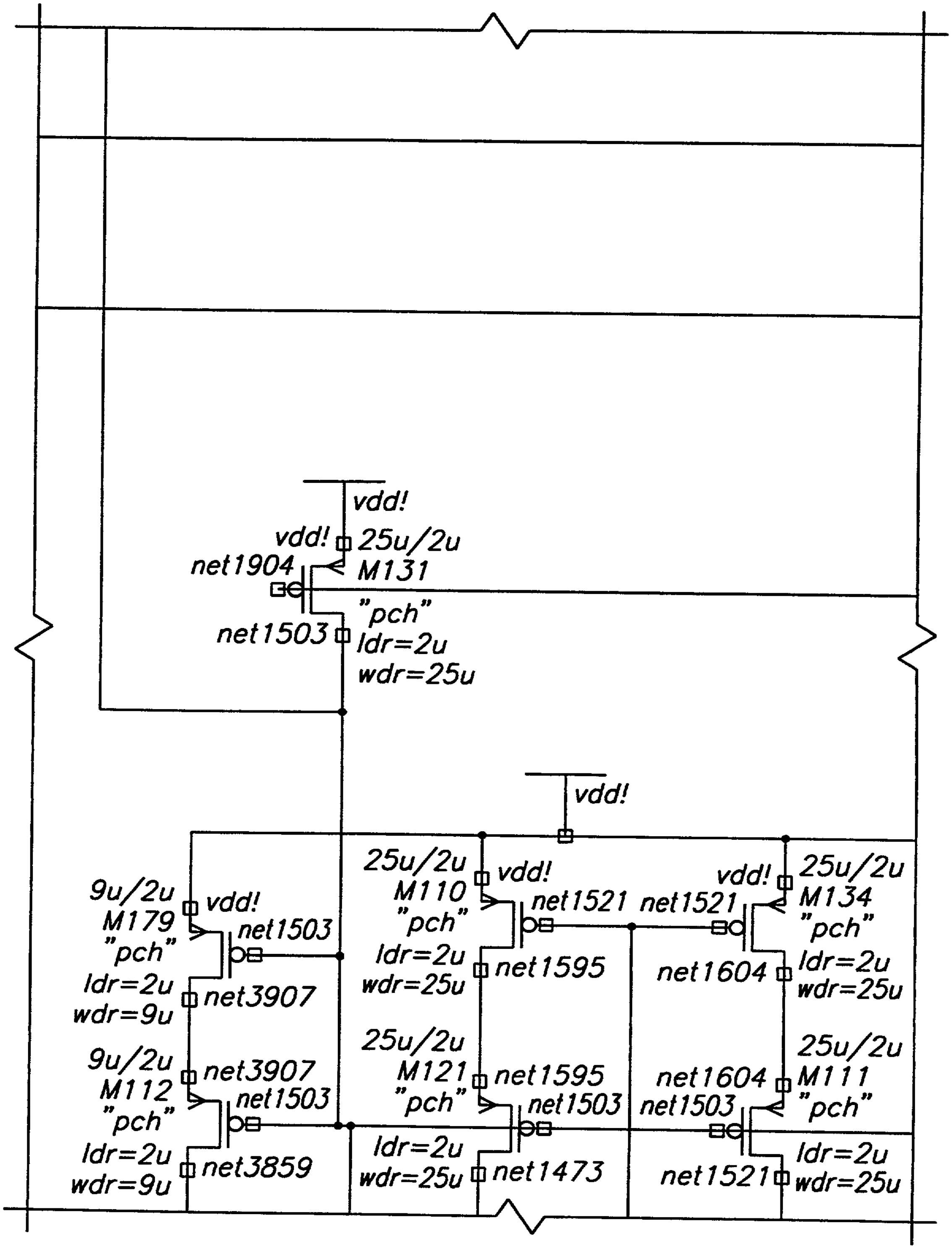
vdd!
vdd!
25u/2u
net1904
M131
"pch"
net1503
ldr=2u
wdr=25u
vdd!
9u/2u
vdd!
M179
net1503
"pch"
ldr=2u
net3907
wdr=9u
9u/2u
net3907
M112
net1503
"pch"
ldr=2u
net3859
wdr=9u
25u/2u
vdd!
M110
net1521
"pch"
ldr=2u
net1595
wdr=25u
25u/2u
M121
net1595
"pch"
net1503
ldr=2u
wdr=25u
net1473
vdd!
net1521
25u/2u
M134
"pch"
net1604
ldr=2u
wdr=25u
25u/2u
net1604
M111
net1503
"pch"
ldr=2u
net1521
wdr=25u

Fig 10.01CE

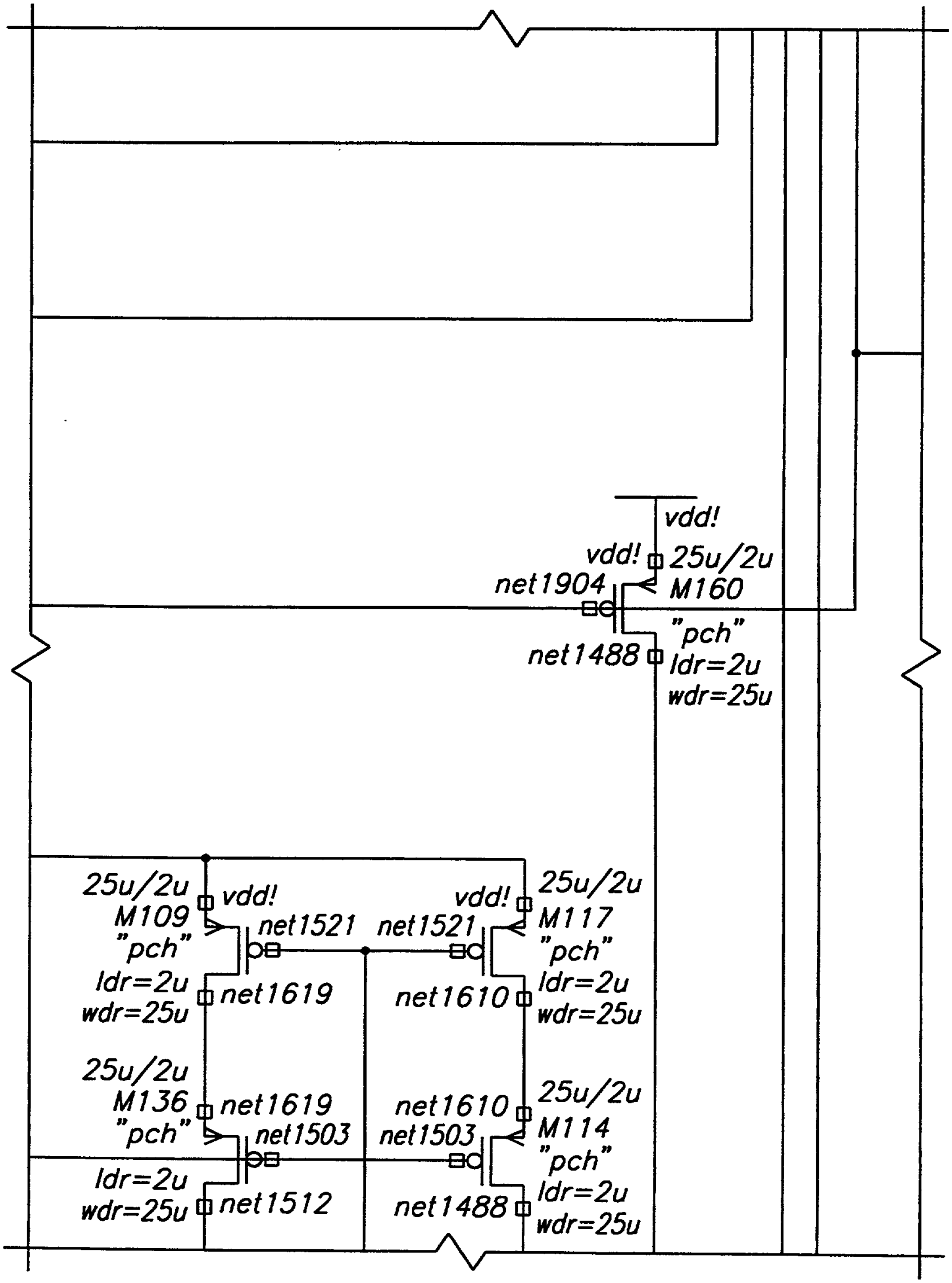
vdd!
vdd!
25u/2u
M160
net1904
"pch"
net1488
ldr=2u
wdr=25u
25u/2u
M109
"pch"
ldr=2u
wdr=25u
vdd!
net1521
net1521
vdd!
25u/2u
M117
"pch"
ldr=2u
wdr=25u
net1619
net1610
25u/2u
M136
"pch"
net1619
net1503
net1610
net1503
25u/2u
M114
"pch"
ldr=2u
wdr=25u
ldr=2u
wdr=25u
net1512
net1488

Fig 10.DICF

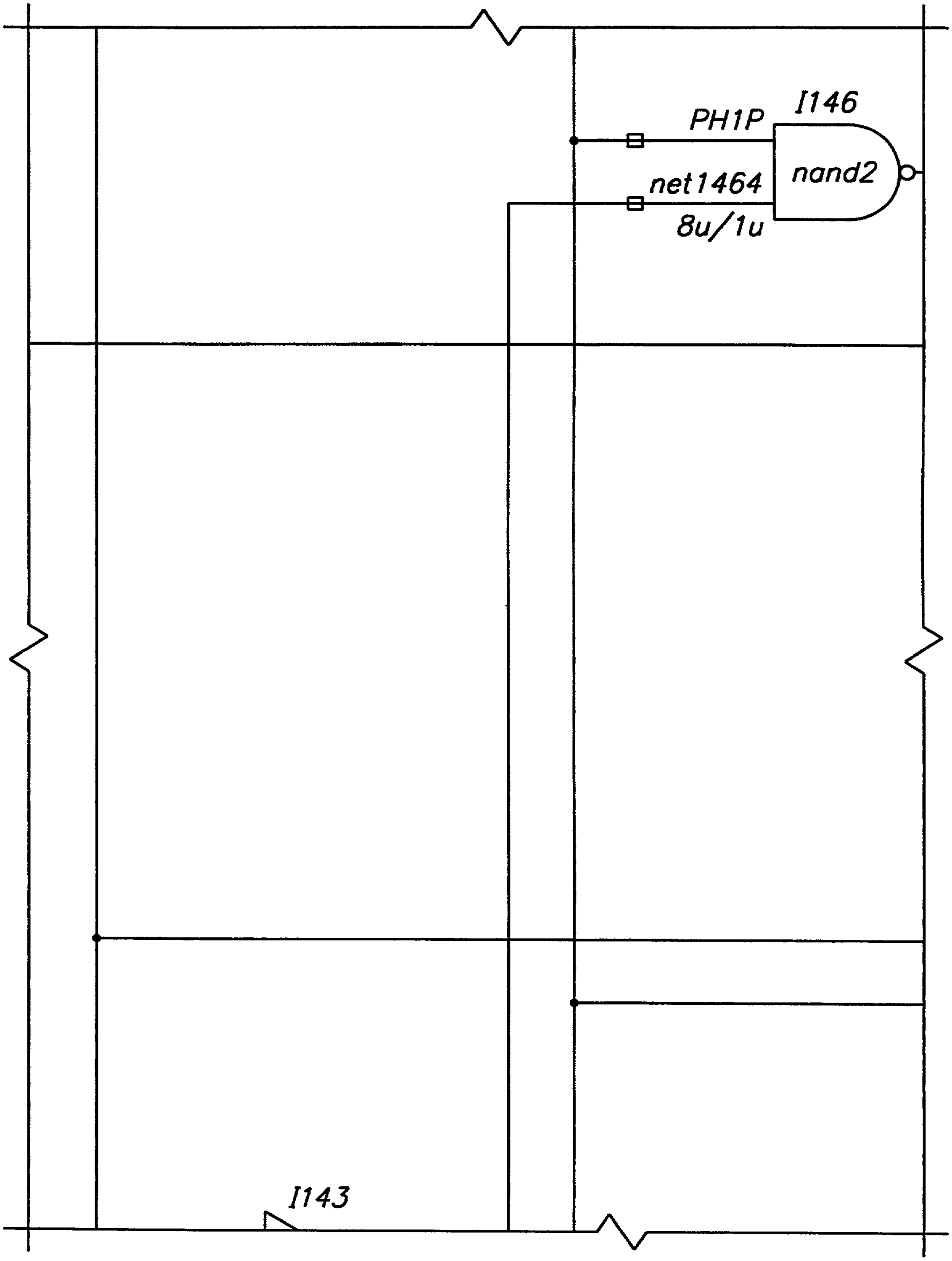

Fig 10.01CG

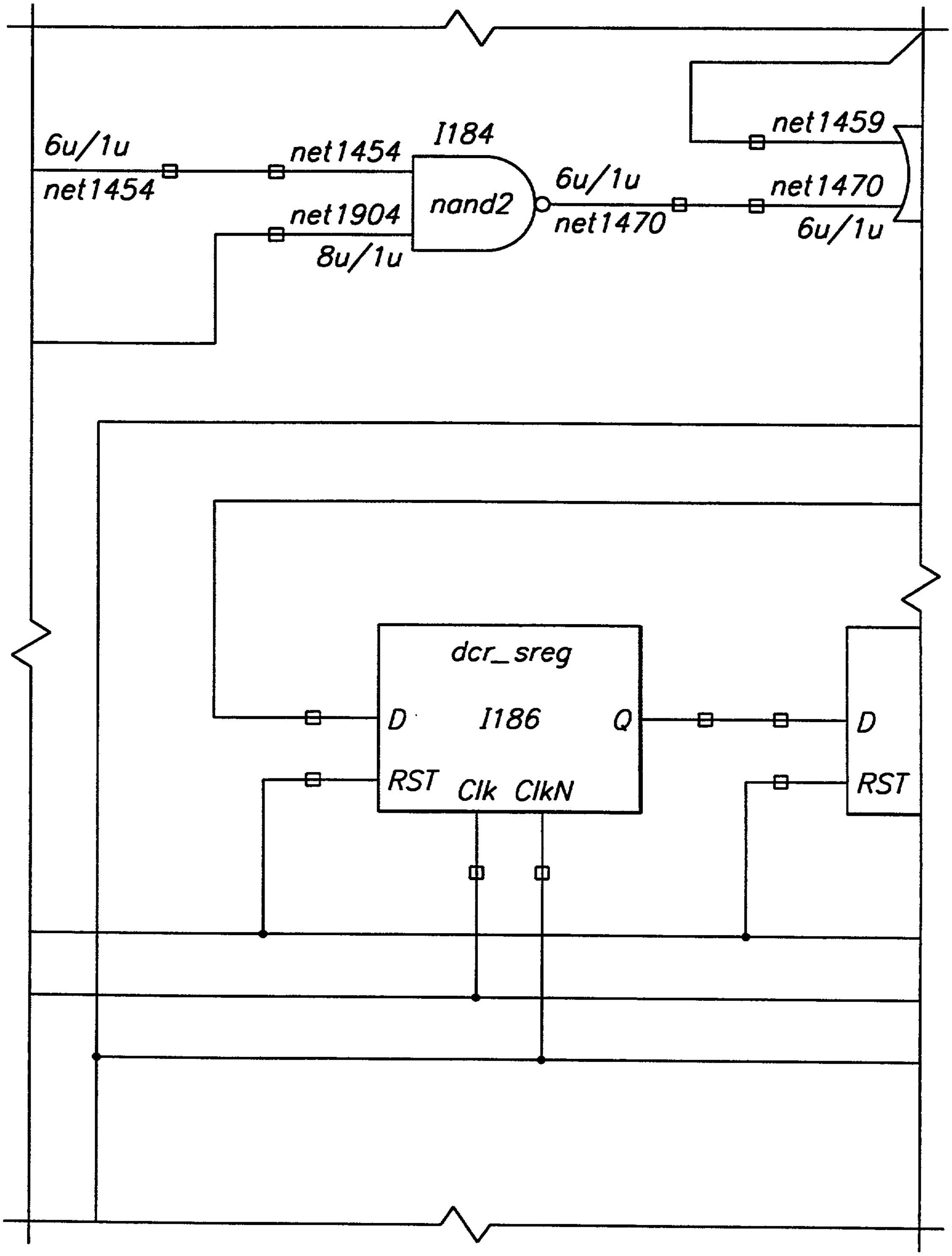
6u/1u
net1454
net1454
net1904
8u/1u
I184
nand2
6u/1u
net1470
net1459
net1470
6u/1u
dcr_sreg
I186
D
RST
Clk
ClkN
Q
D
RST

Fig 10.01CH

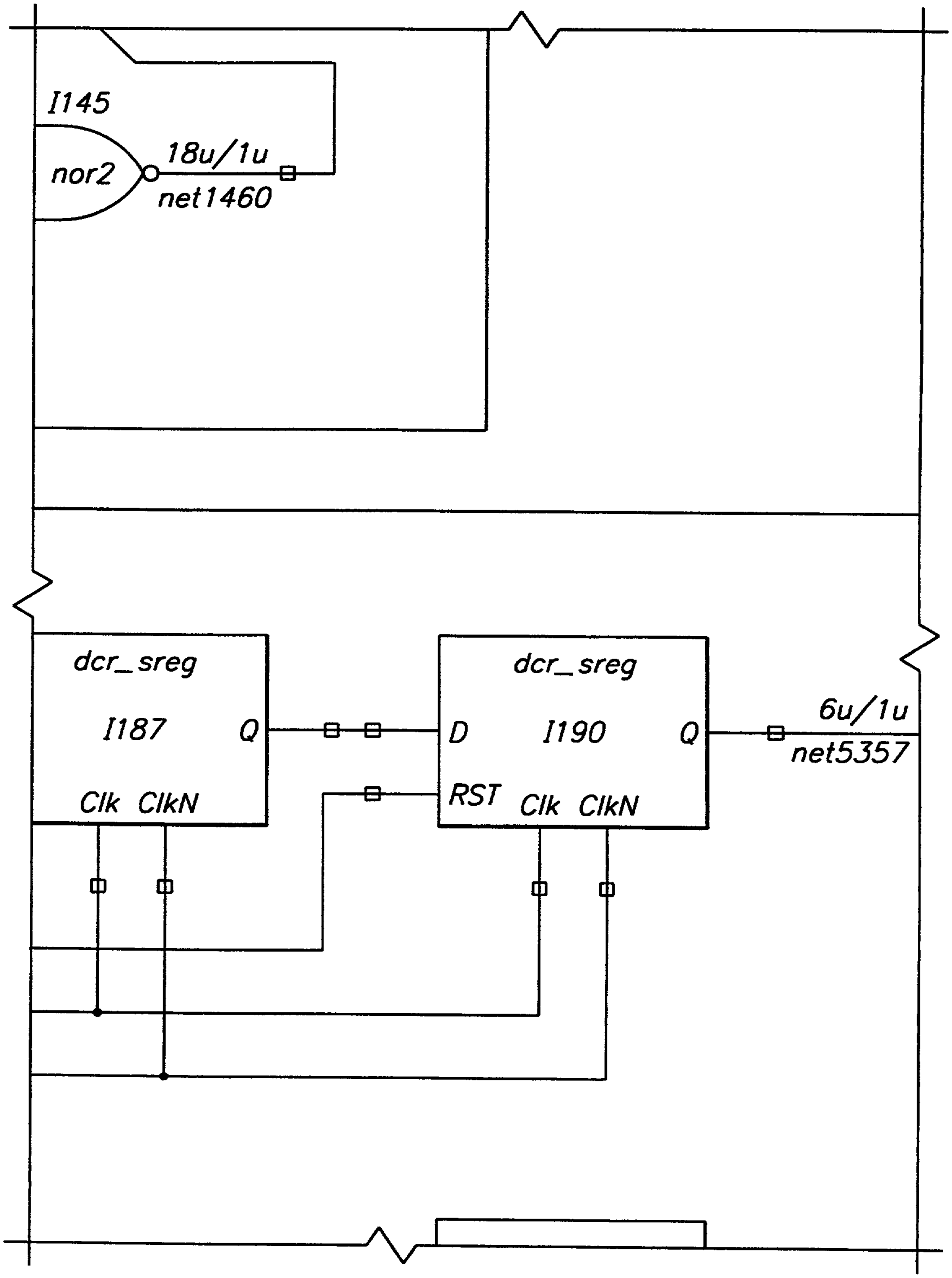
I145
nor2
18u/1u
net1460
dcr_sreg
I187
Q
Clk
ClkN
dcr_sreg
D
I190
Q
RST
Clk
ClkN
6u/1u
net5357

Fig 10.01CI

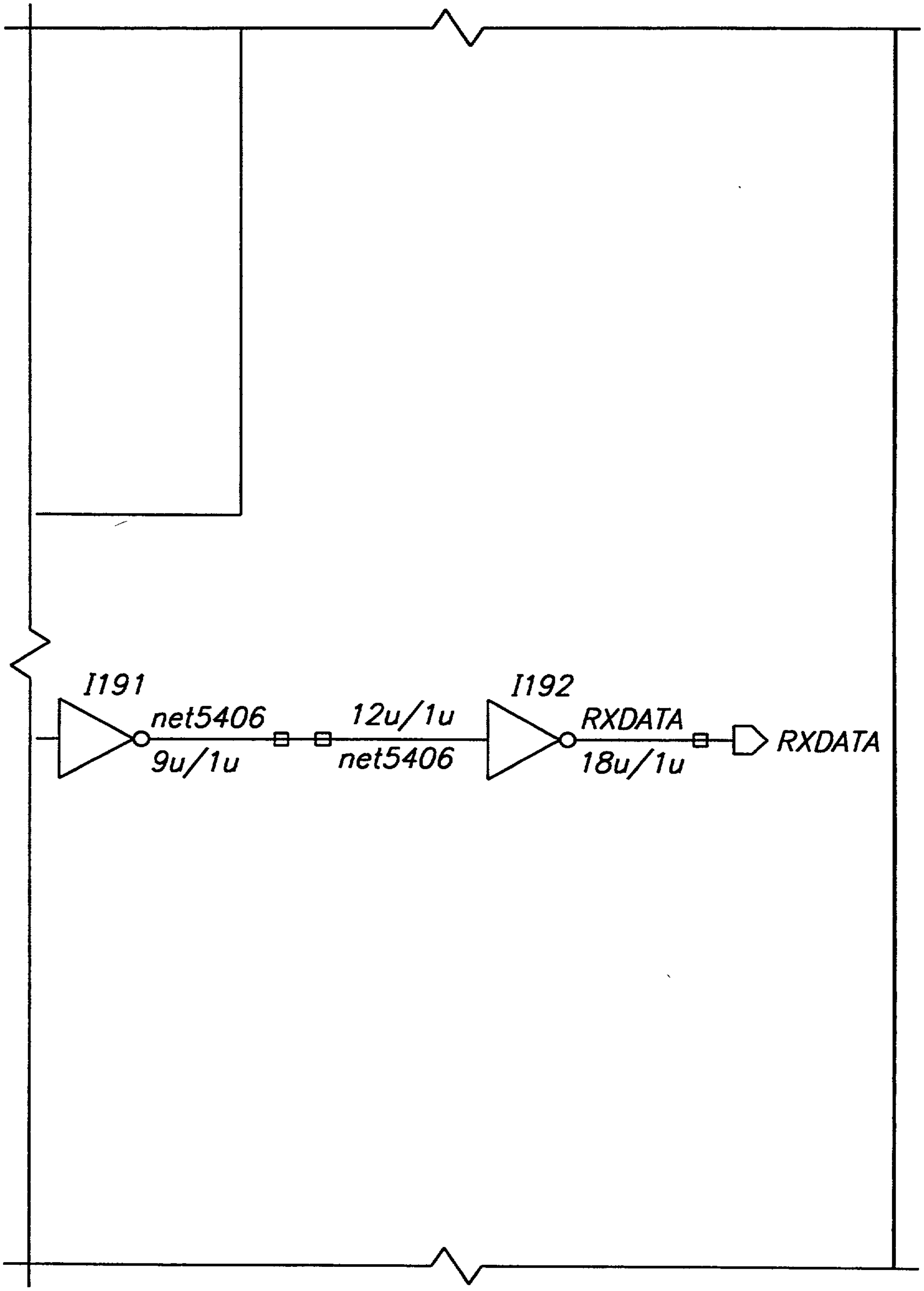

Fig 10.01Cd

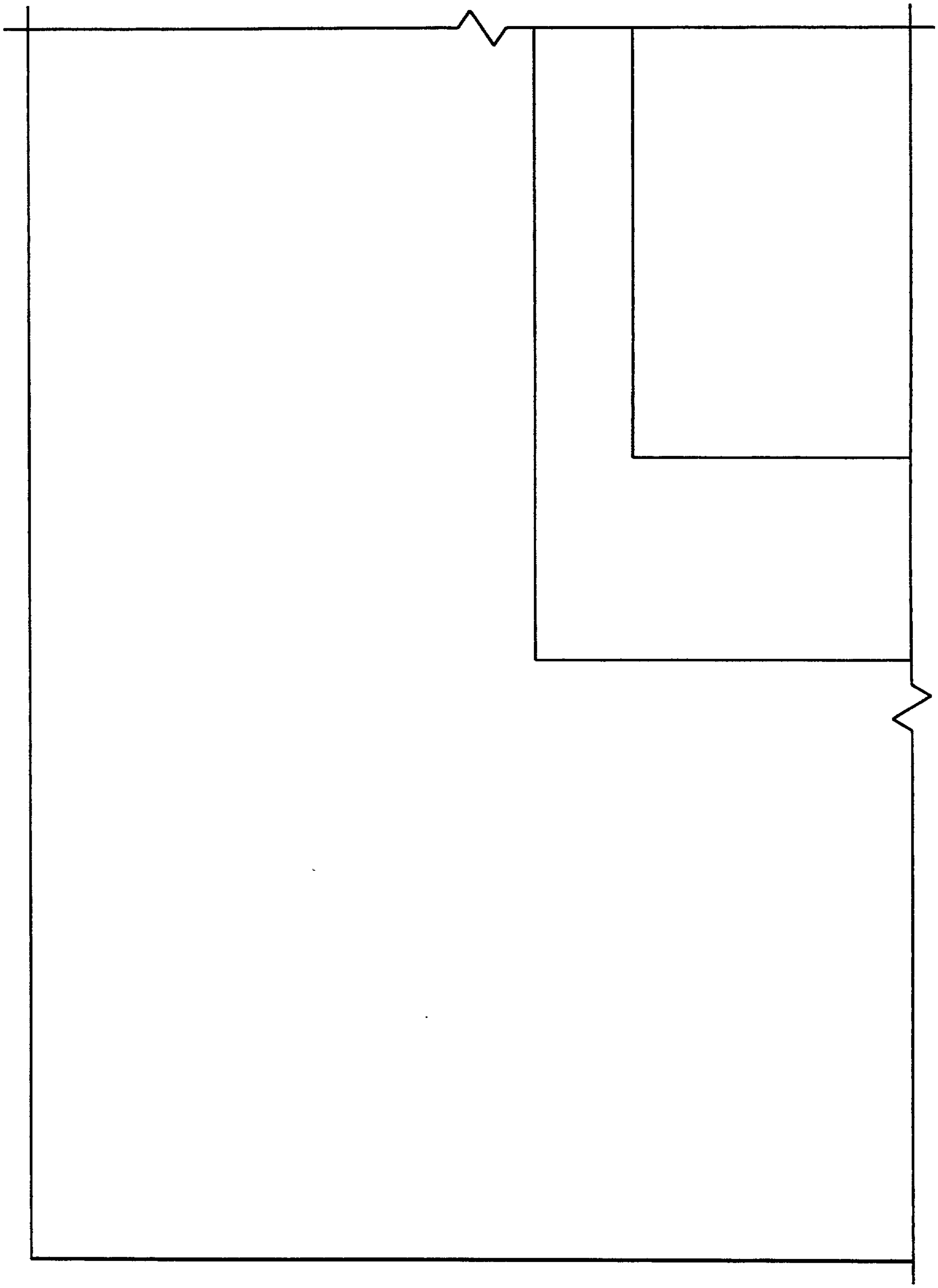

Fig 10.01DB

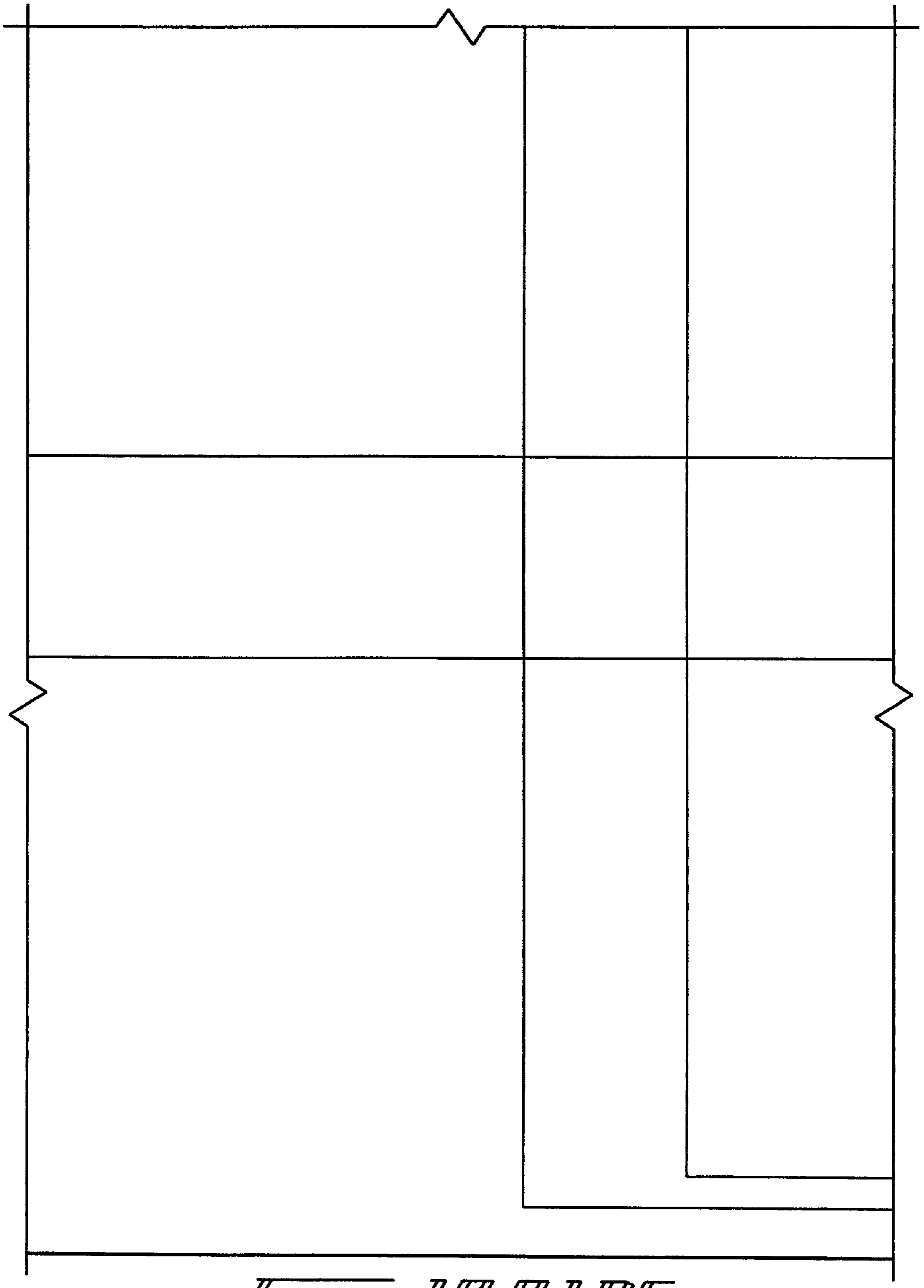

Fig 10.01DC

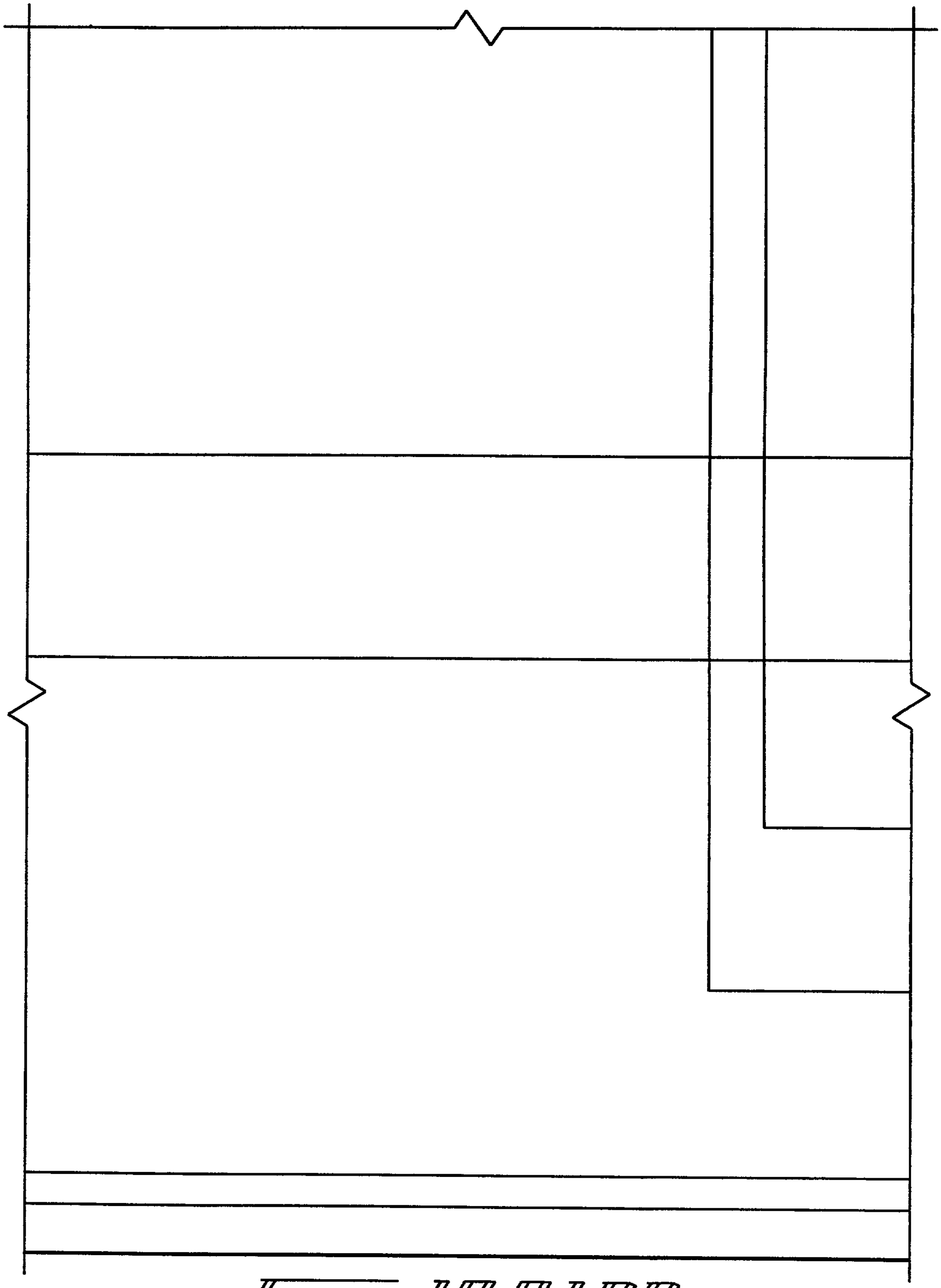

Fig 10.01DD

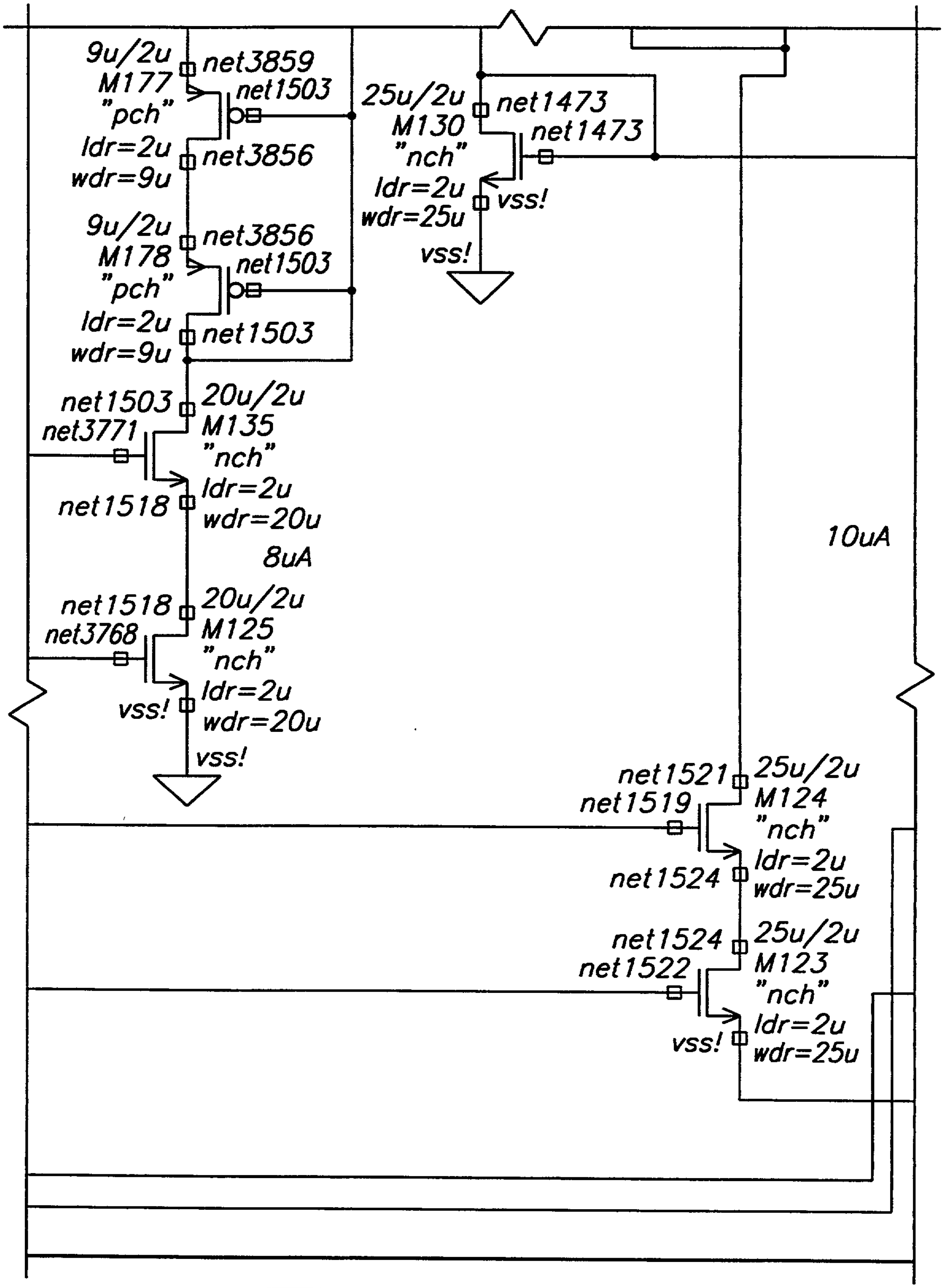
9u/2u
M177
"pch"
ldr=2u
wdr=9u
net3859
net1503
net3856
9u/2u
M178
"pch"
ldr=2u
wdr=9u
net3856
net1503
net1503
25u/2u
M130
"nch"
ldr=2u
wdr=25u
net1473
net1473
vss!
vss!
net1503
net3771
20u/2u
M135
"nch"
ldr=2u
wdr=20u
net1518
8uA
net1518
net3768
20u/2u
M125
"nch"
ldr=2u
wdr=20u
vss!
vss!
10uA
net1521
net1519
25u/2u
M124
"nch"
ldr=2u
wdr=25u
net1524
net1524
net1522
25u/2u
M123
"nch"
ldr=2u
wdr=25u
vss!

Fig 10.01DE

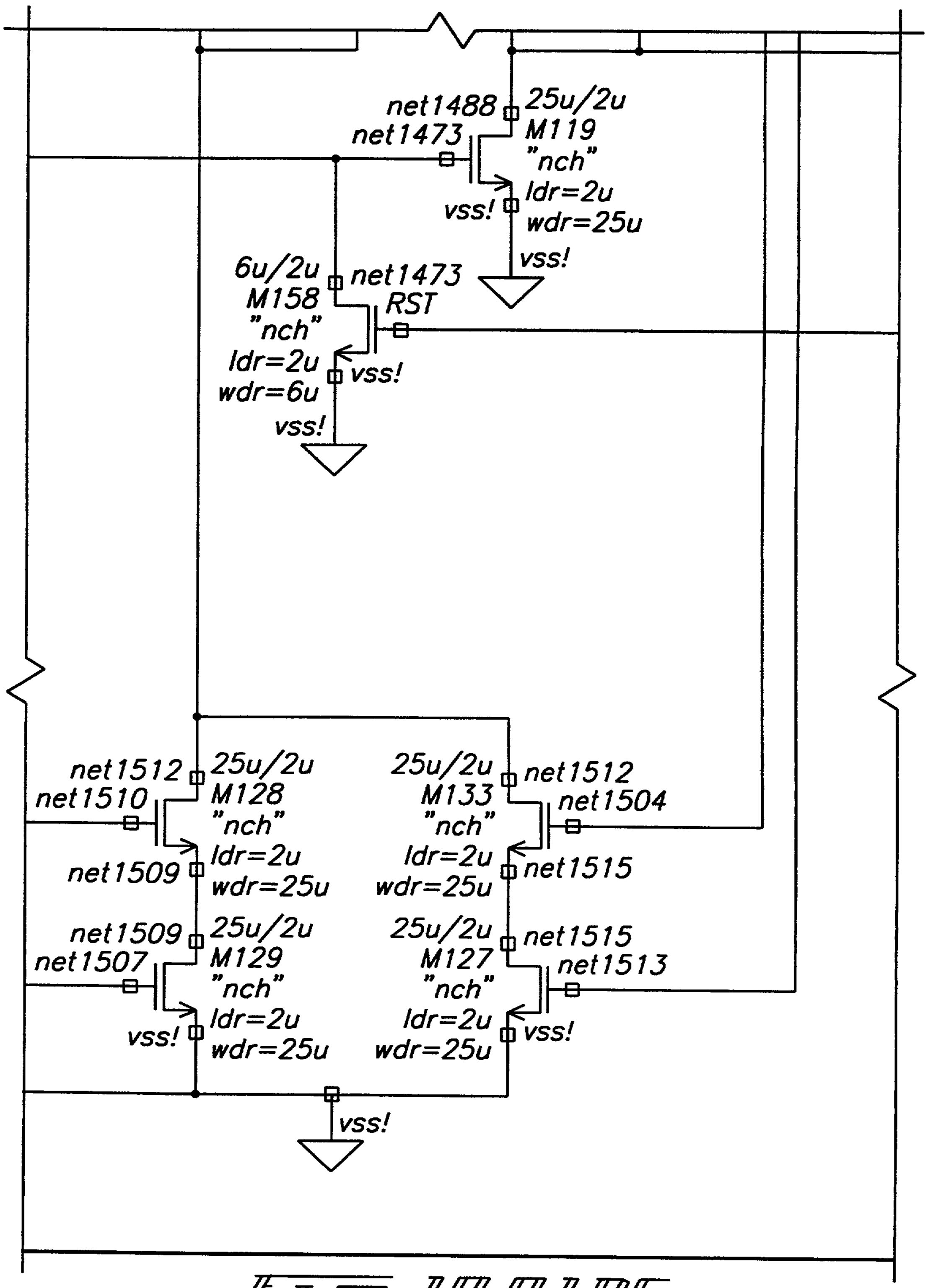
net1488
25u/2u
M119
net1473
"nch"
ldr=2u
vss!
wdr=25u
vss!
6u/2u
net1473
M158
RST
"nch"
ldr=2u
vss!
wdr=6u
vss!
net1512
25u/2u
25u/2u
net1512
net1510
M128
M133
net1504
"nch"
"nch"
ldr=2u
ldr=2u
net1509
wdr=25u
net1515
wdr=25u
net1509
25u/2u
25u/2u
net1515
net1507
M129
M127
net1513
"nch"
"nch"
ldr=2u
ldr=2u
vss!
wdr=25u
vss!
wdr=25u
vss!

Fig 10.01DF

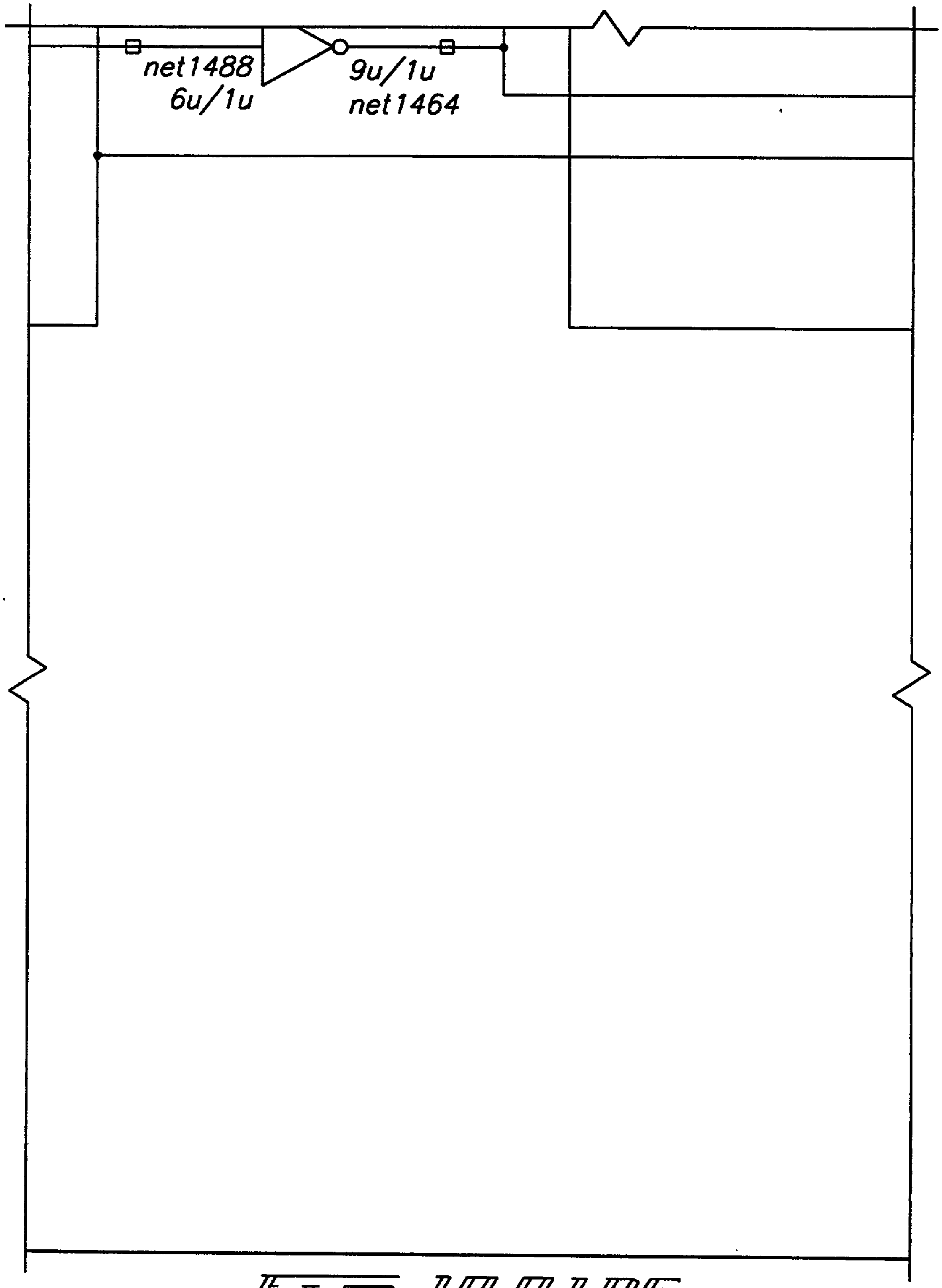

Fig 10.01DG

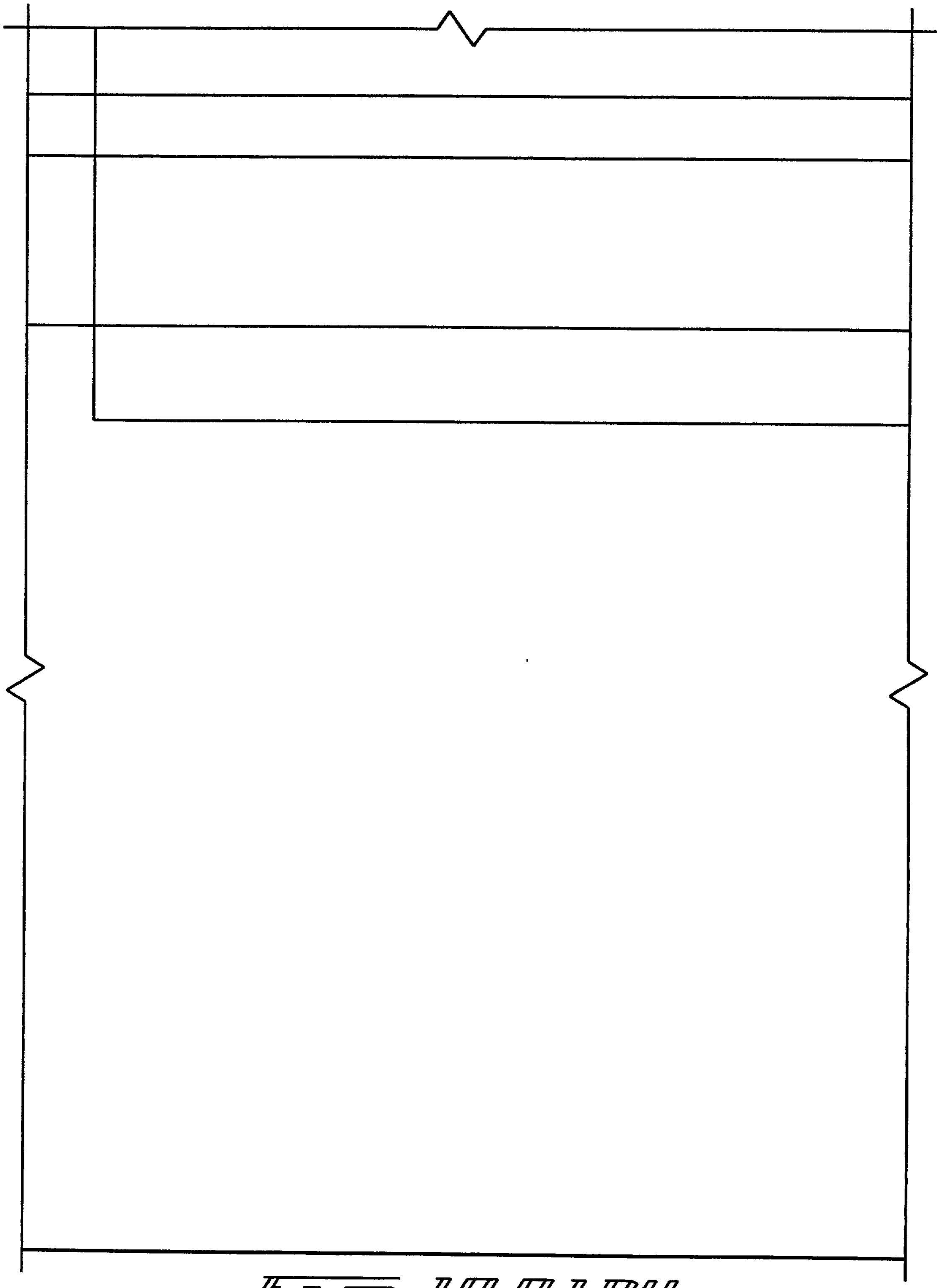

Fig 10.01DH

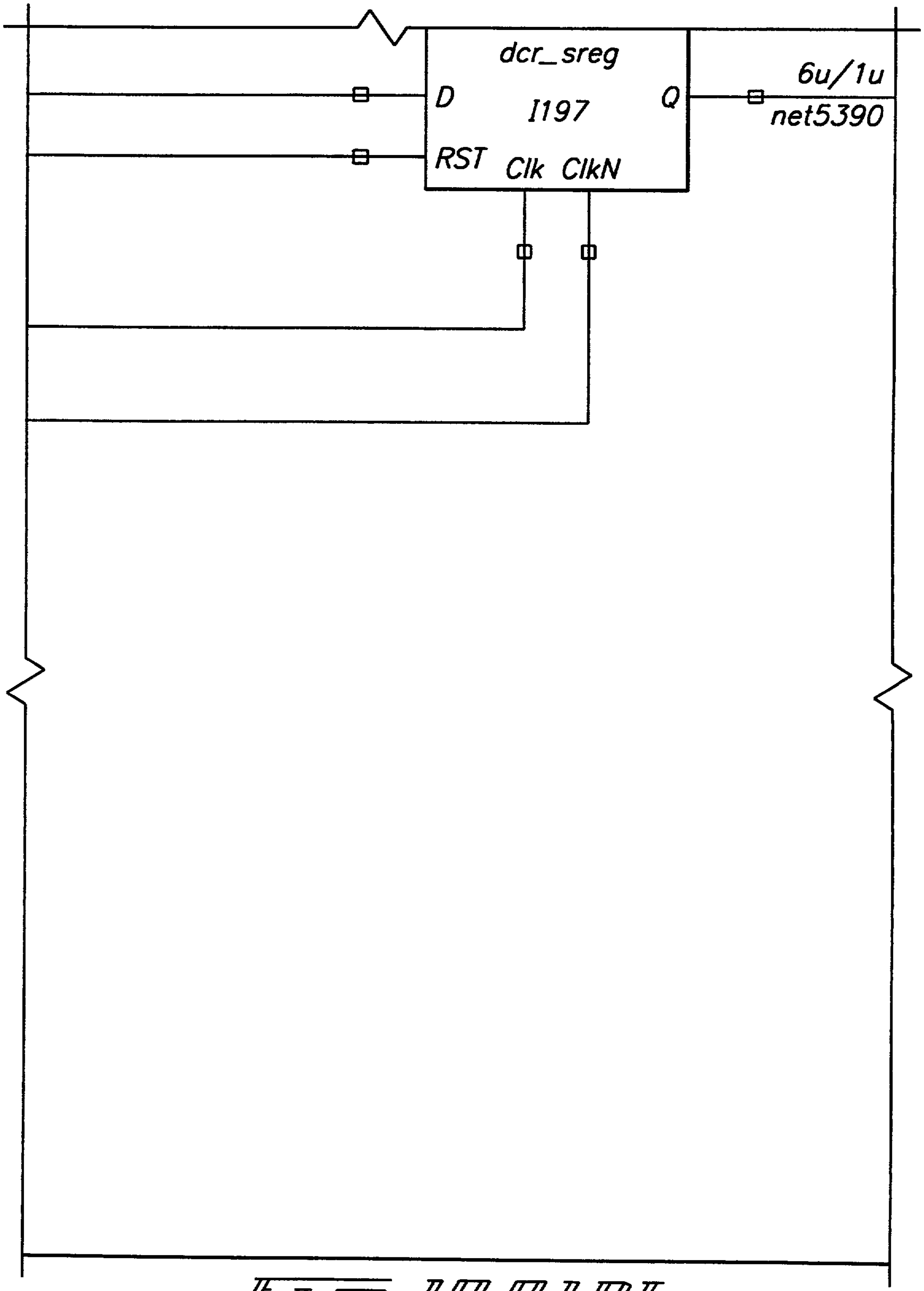

Fig 10.01DI

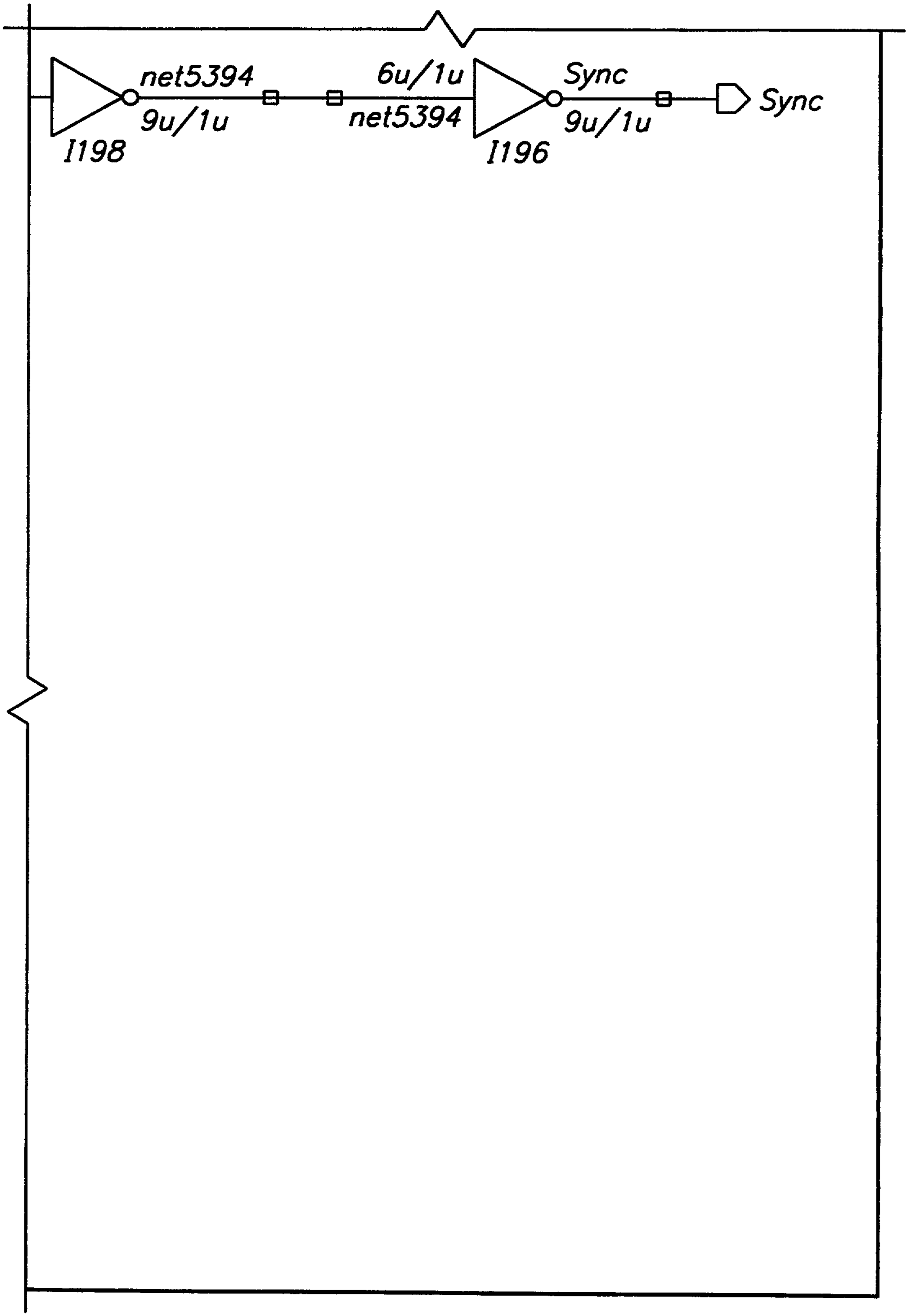

Fig 10.01D.J

10.0101AA	10.0101AB	10.0101AC	10.0101AD	10.0101AE	10.0101AF	10.0101AG
10.0101BA	10.0101BB	10.0101BC	10.0101BD	10.0101BE	10.0101BF	10.0101BG

Fig 10.0101

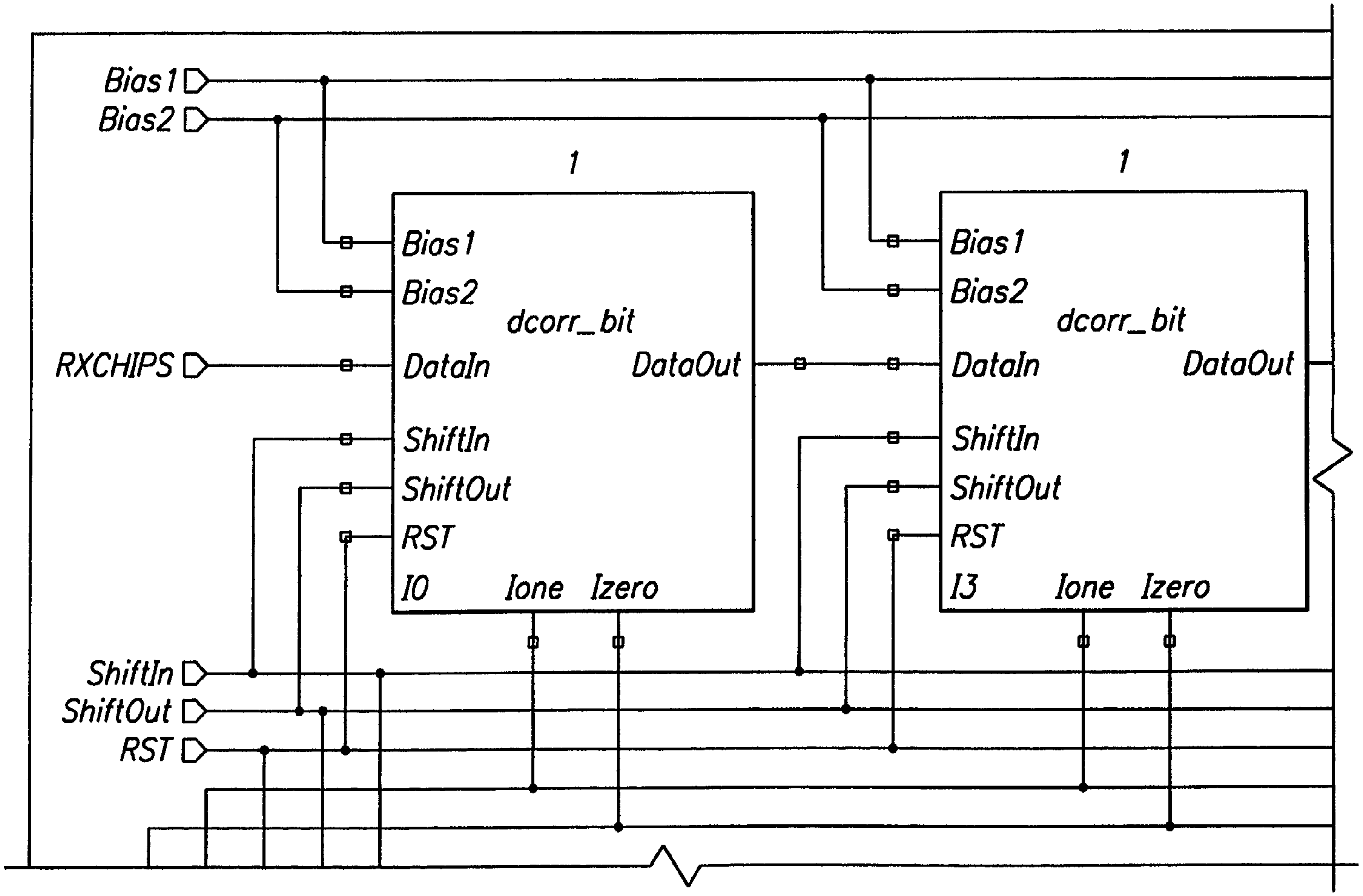

Fig 10.0101AA

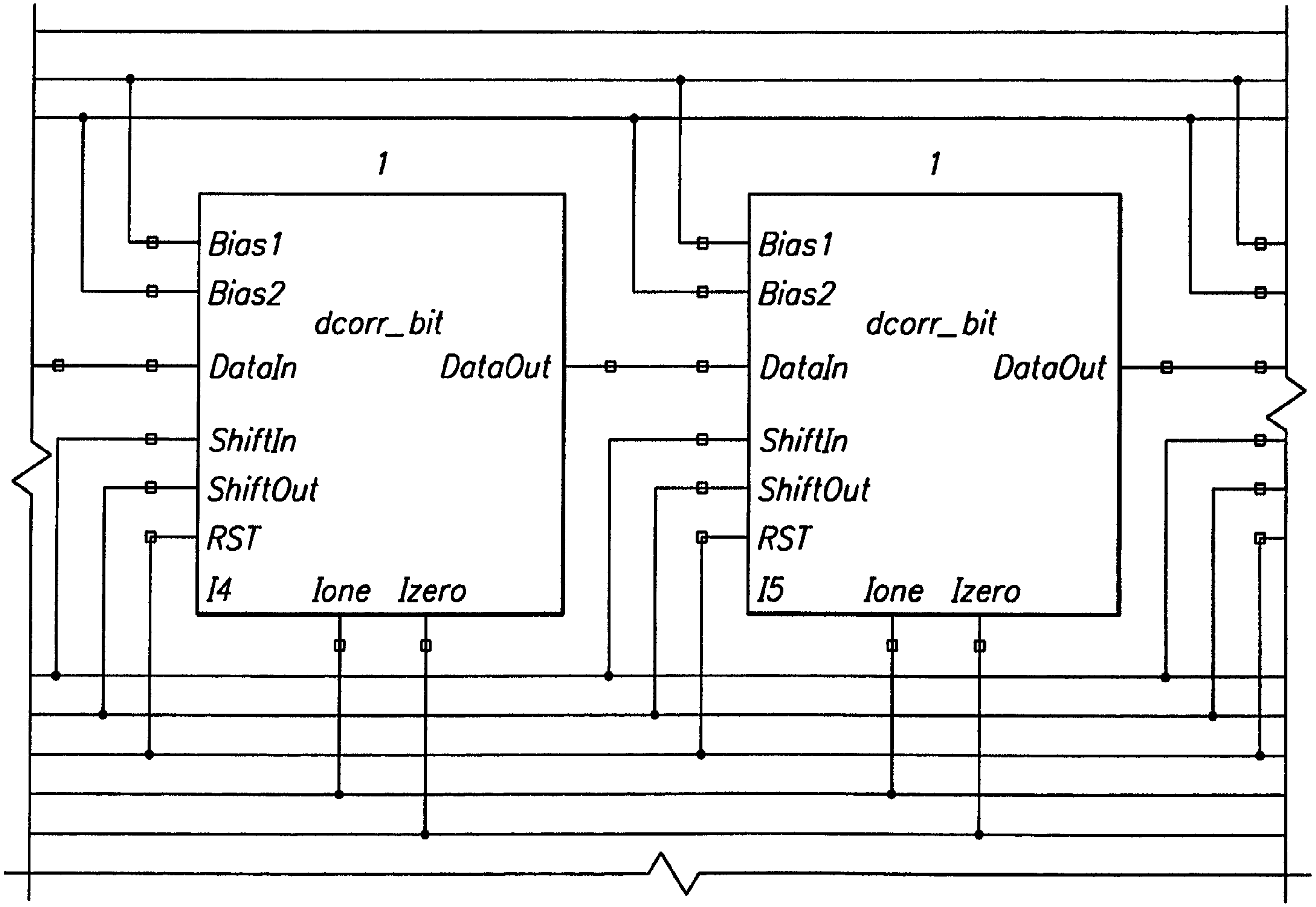

Fig 10.0101AB

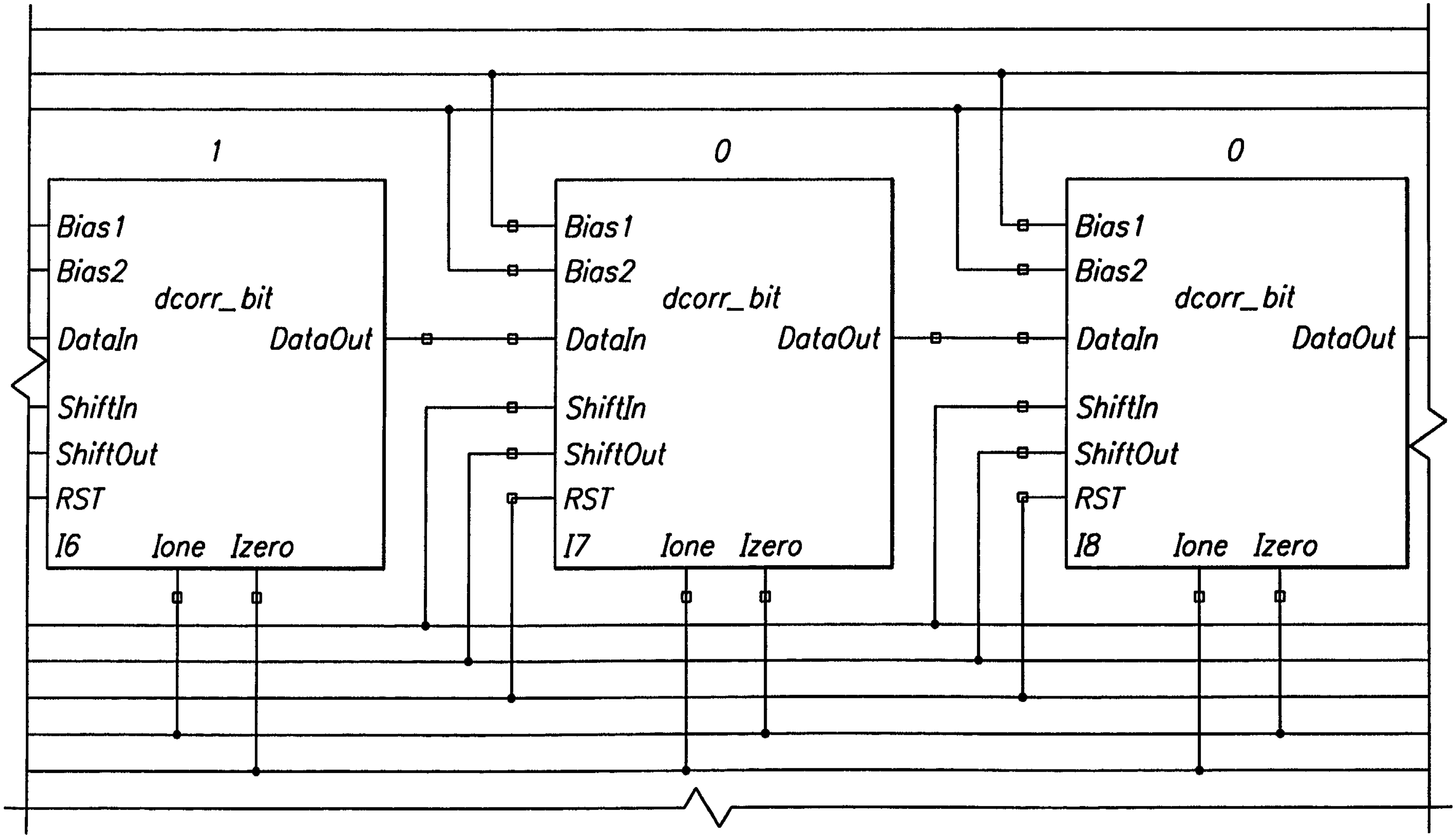

FIG. 10.0101AC

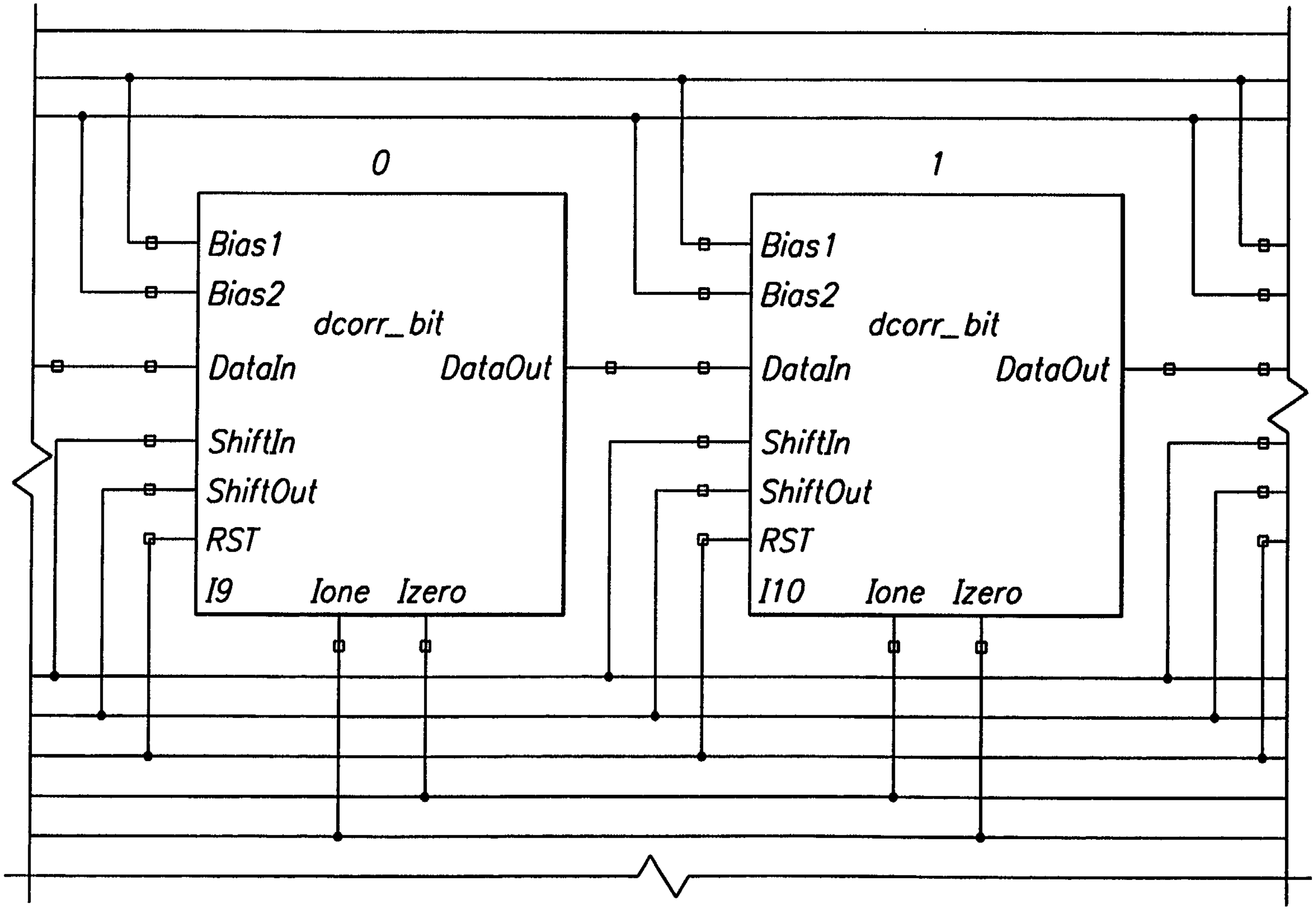

Fig 10.0101AD

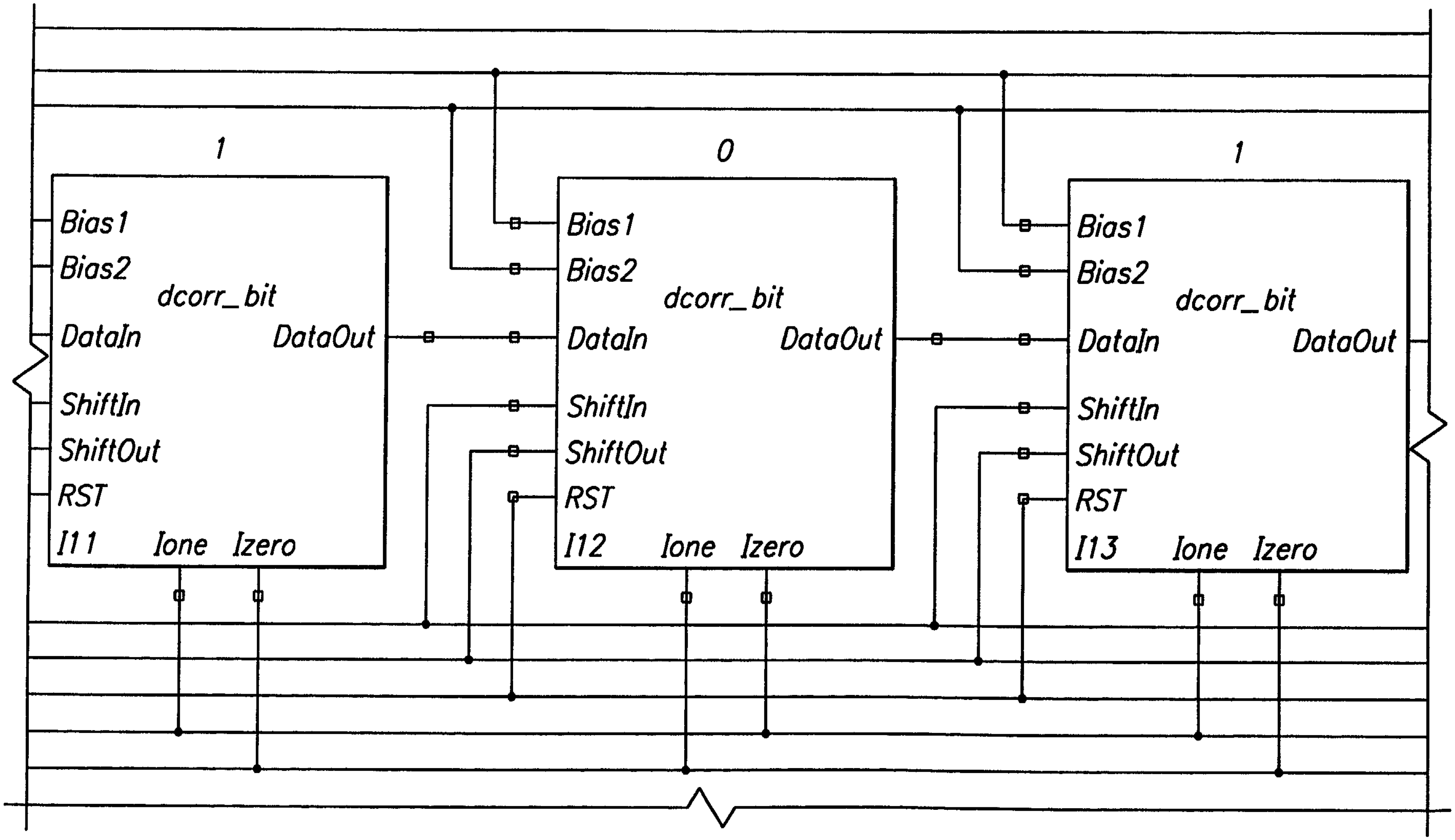

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Fig 10.0101AE

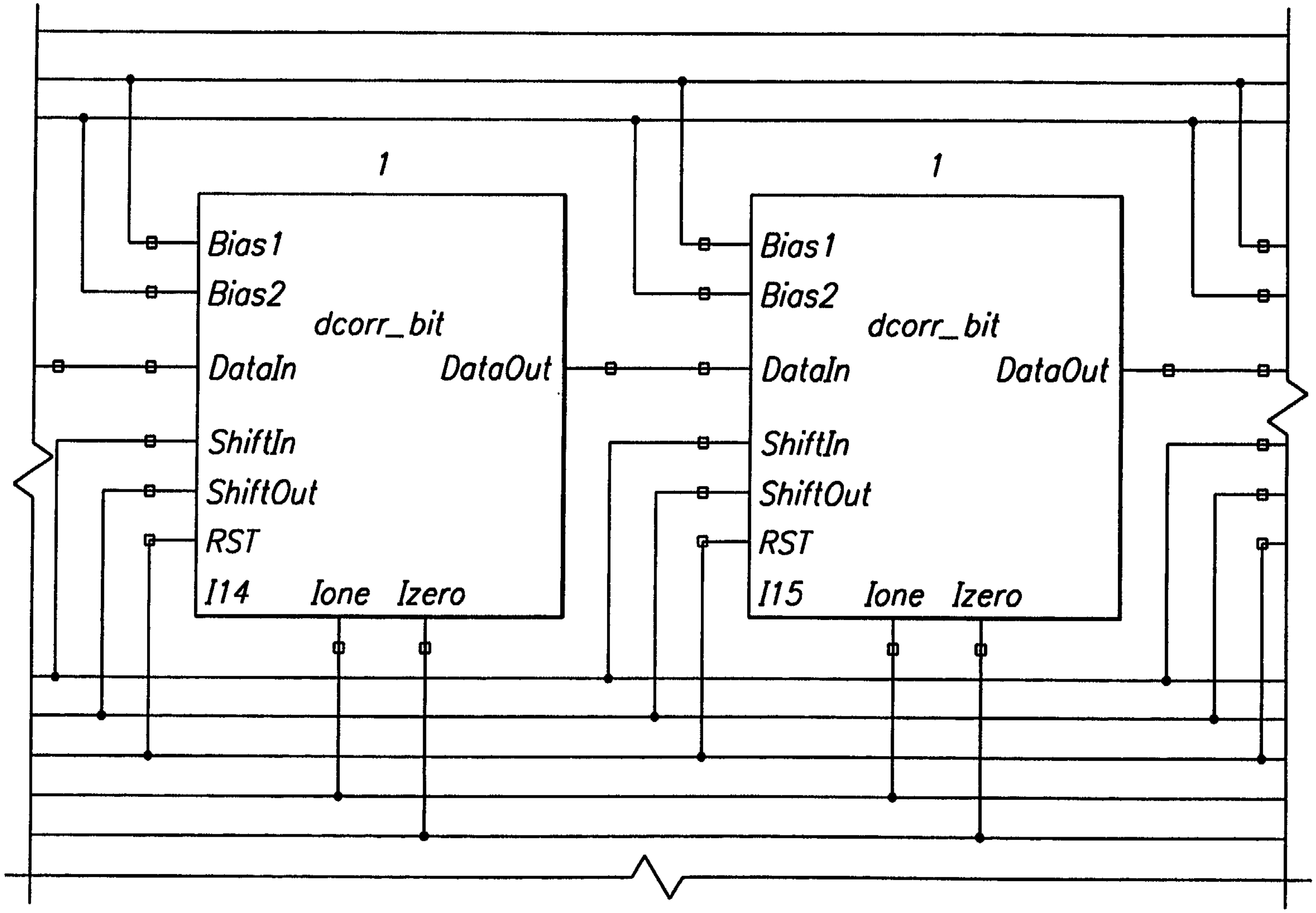

Fig 10.0101AF

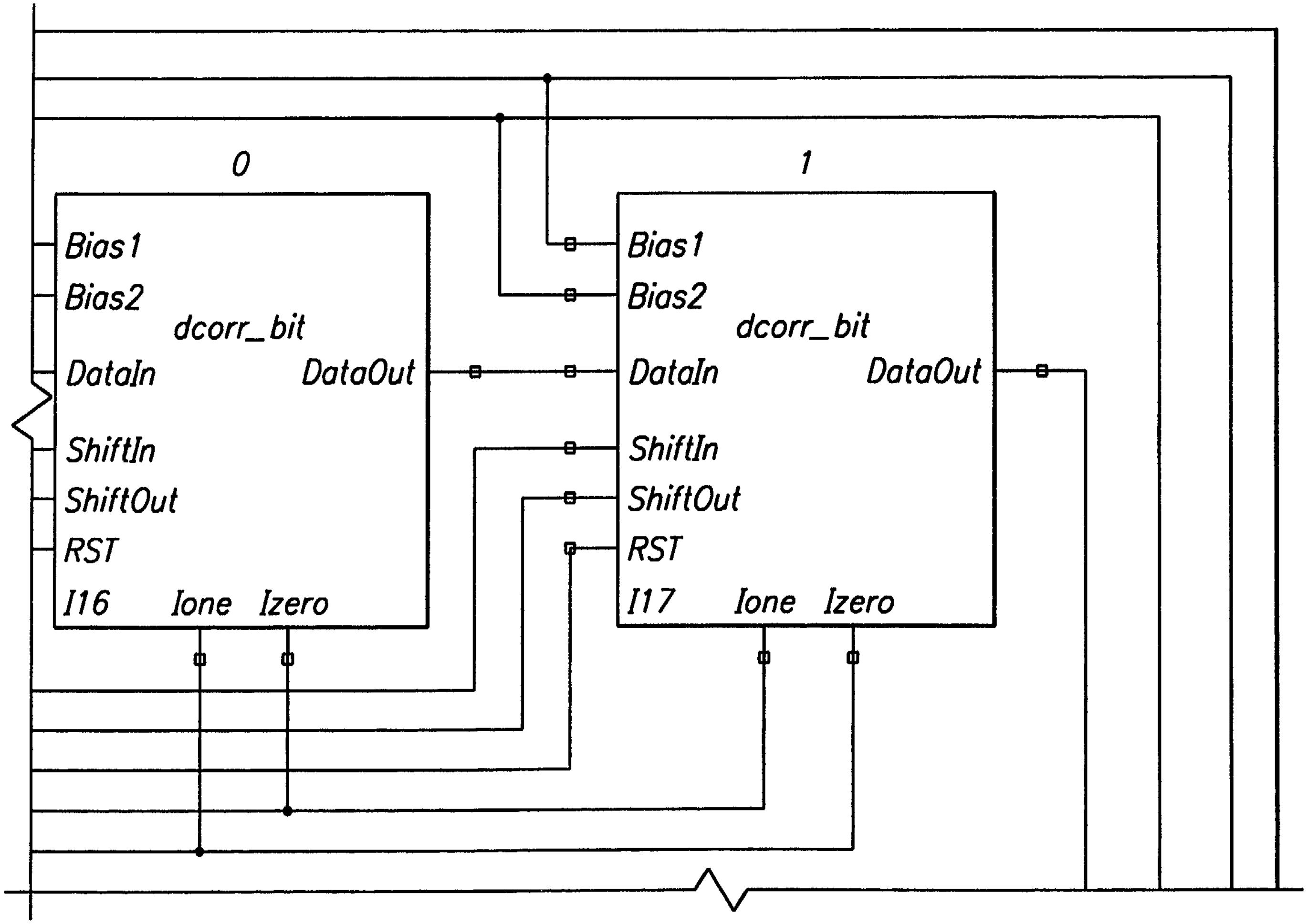

Fig 10.0101AG

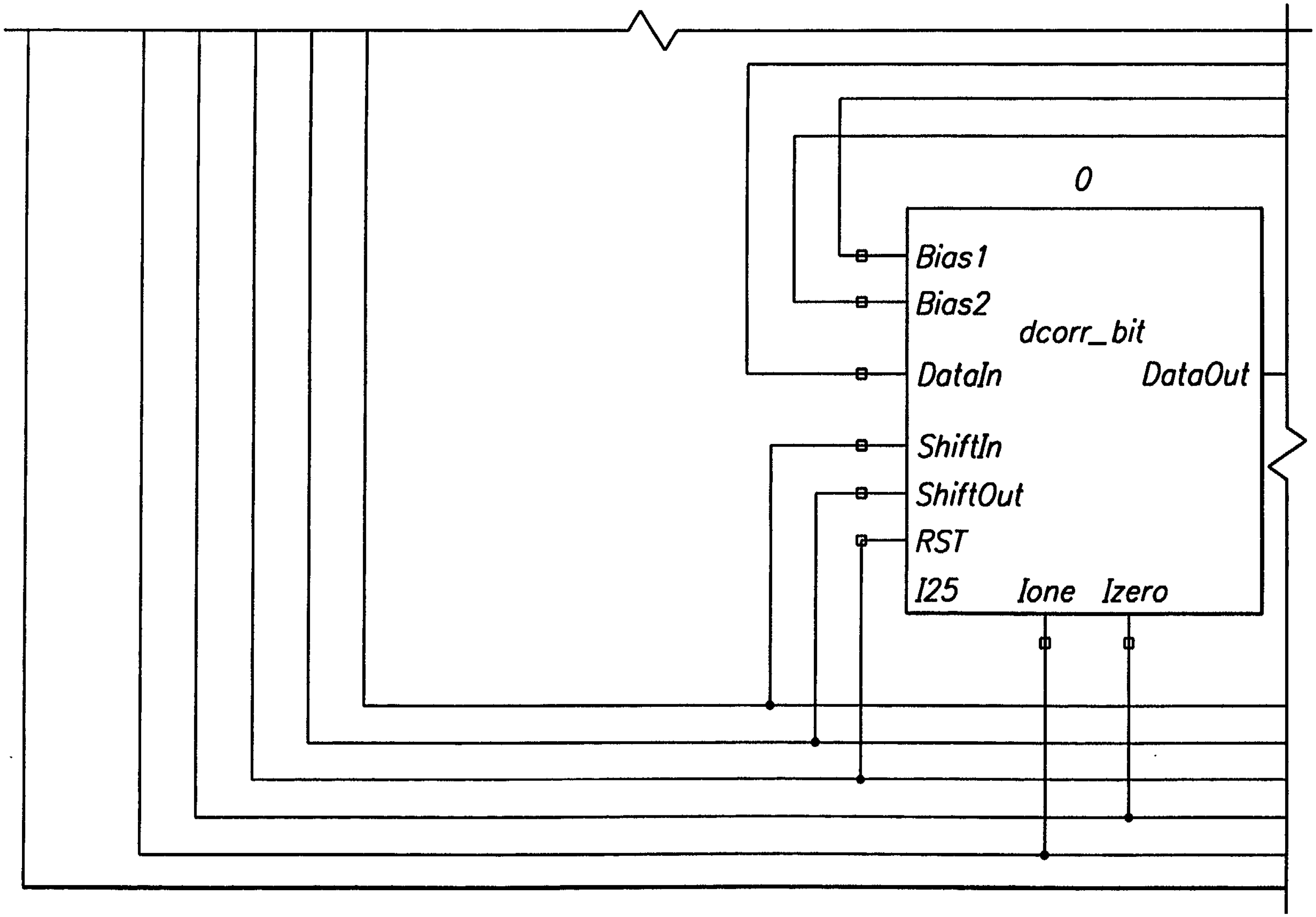

Fig 10.0101BA

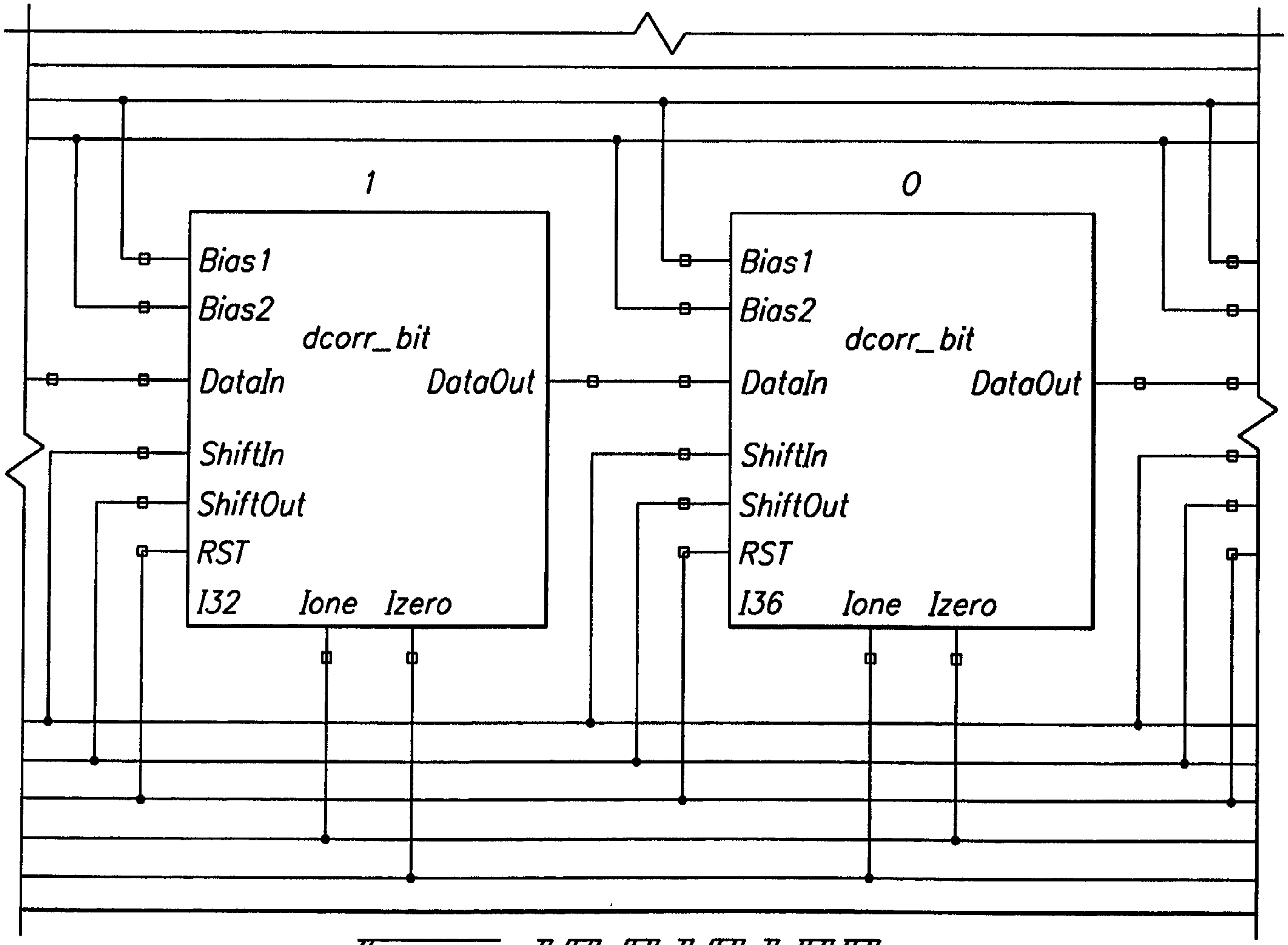

Fig 10.0101BB

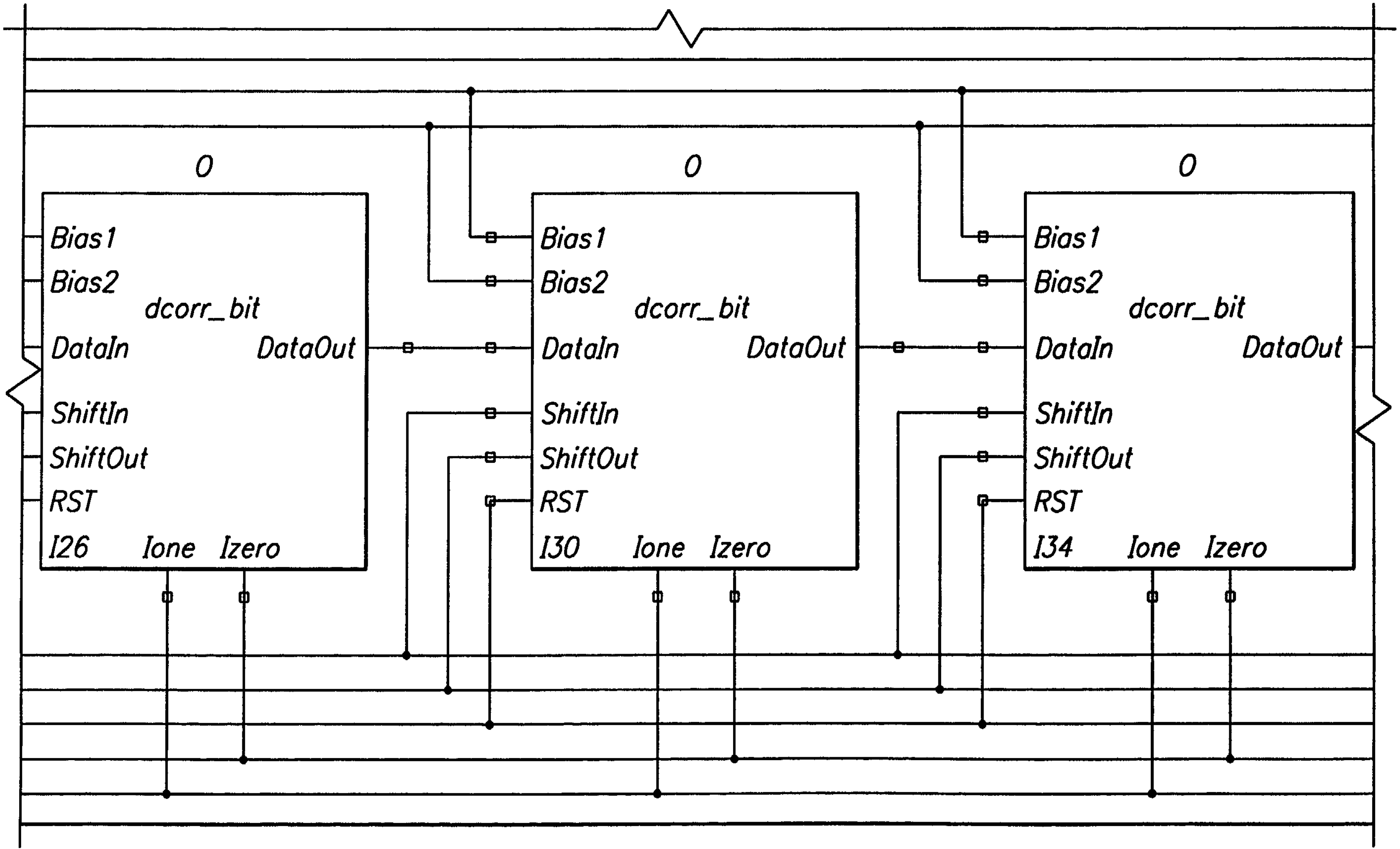

Fig 10.0101BC

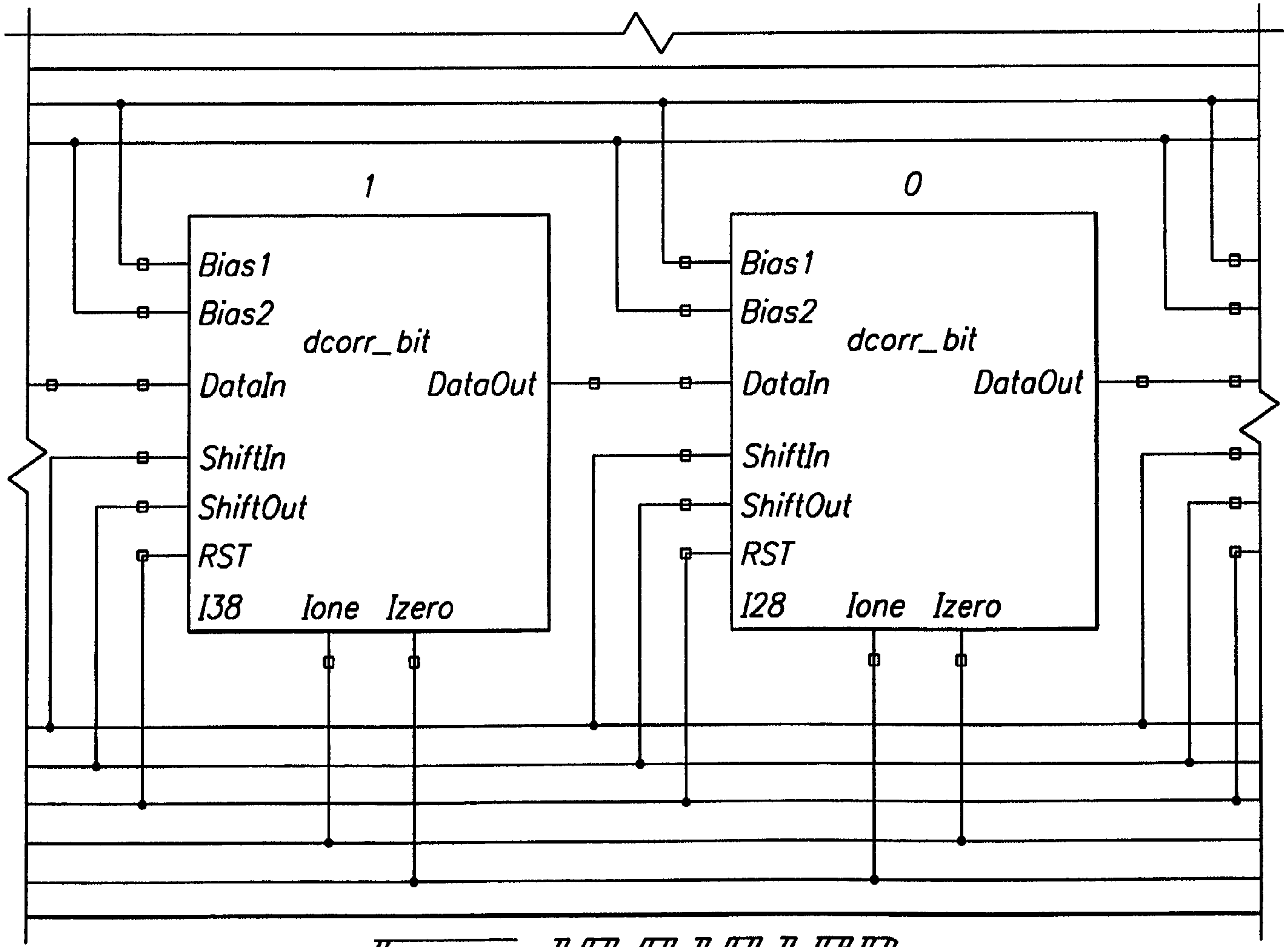

Fig 10.0101BD

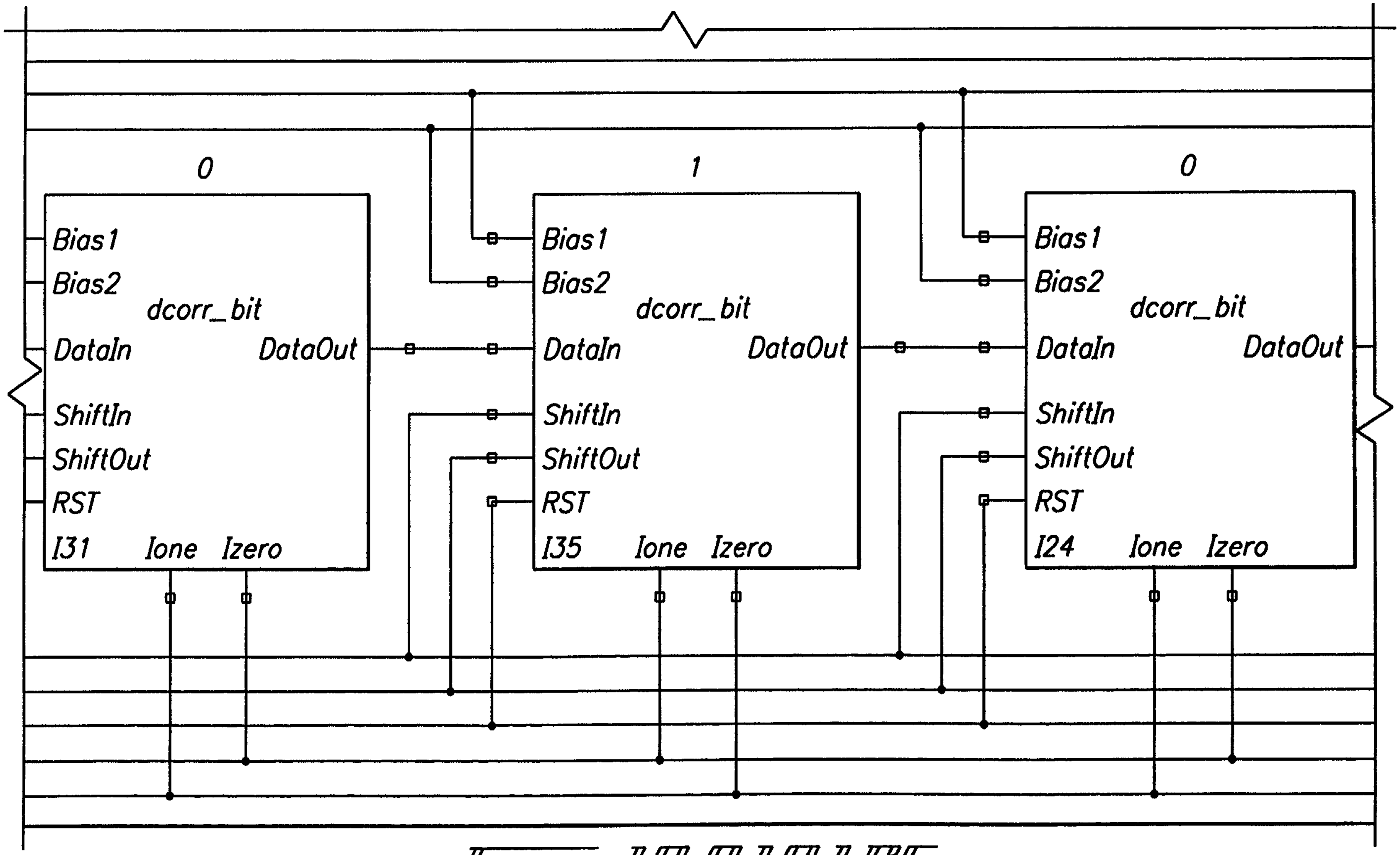

Fig 10.0101BE

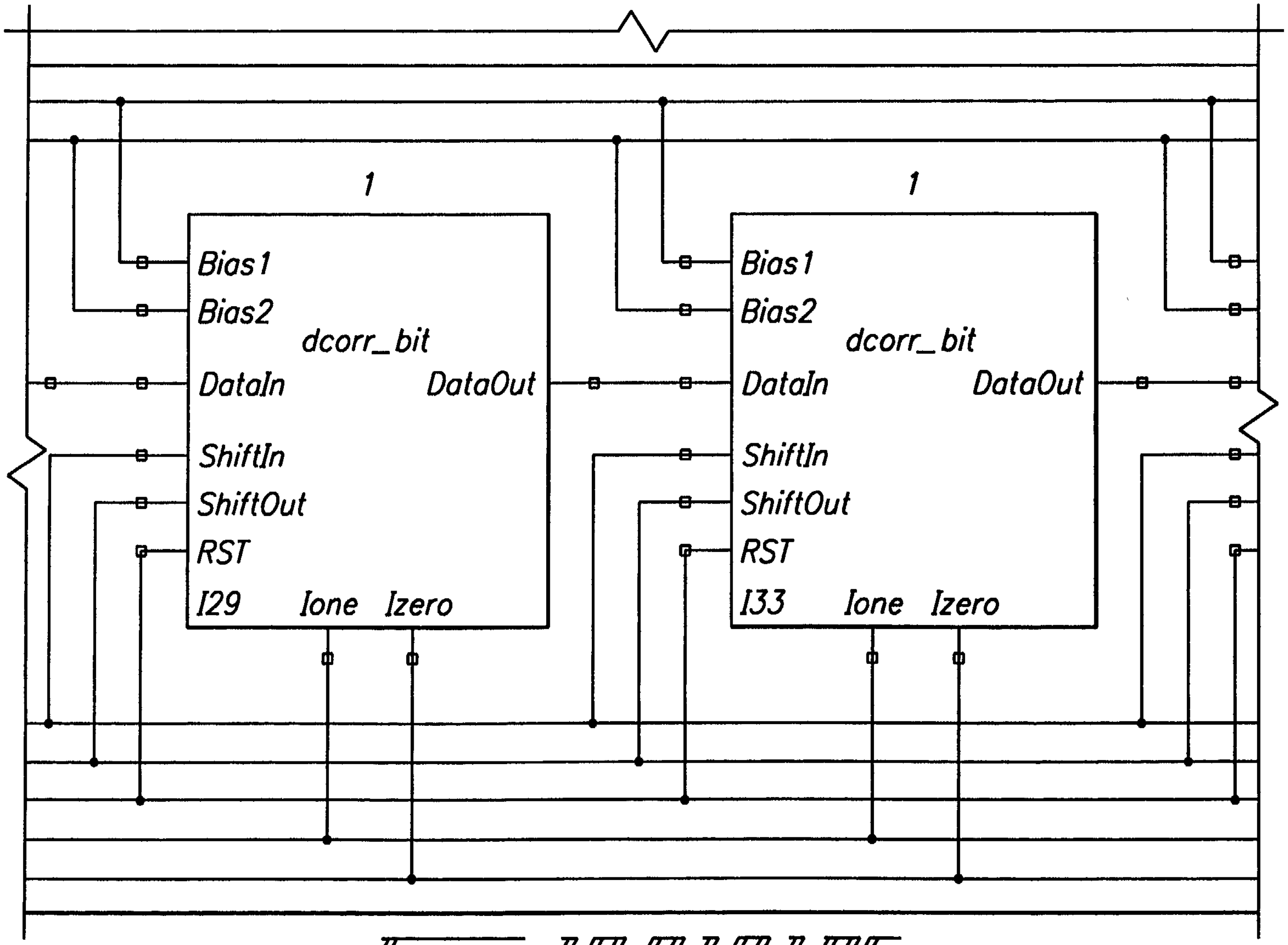

Fig 10.0101BF

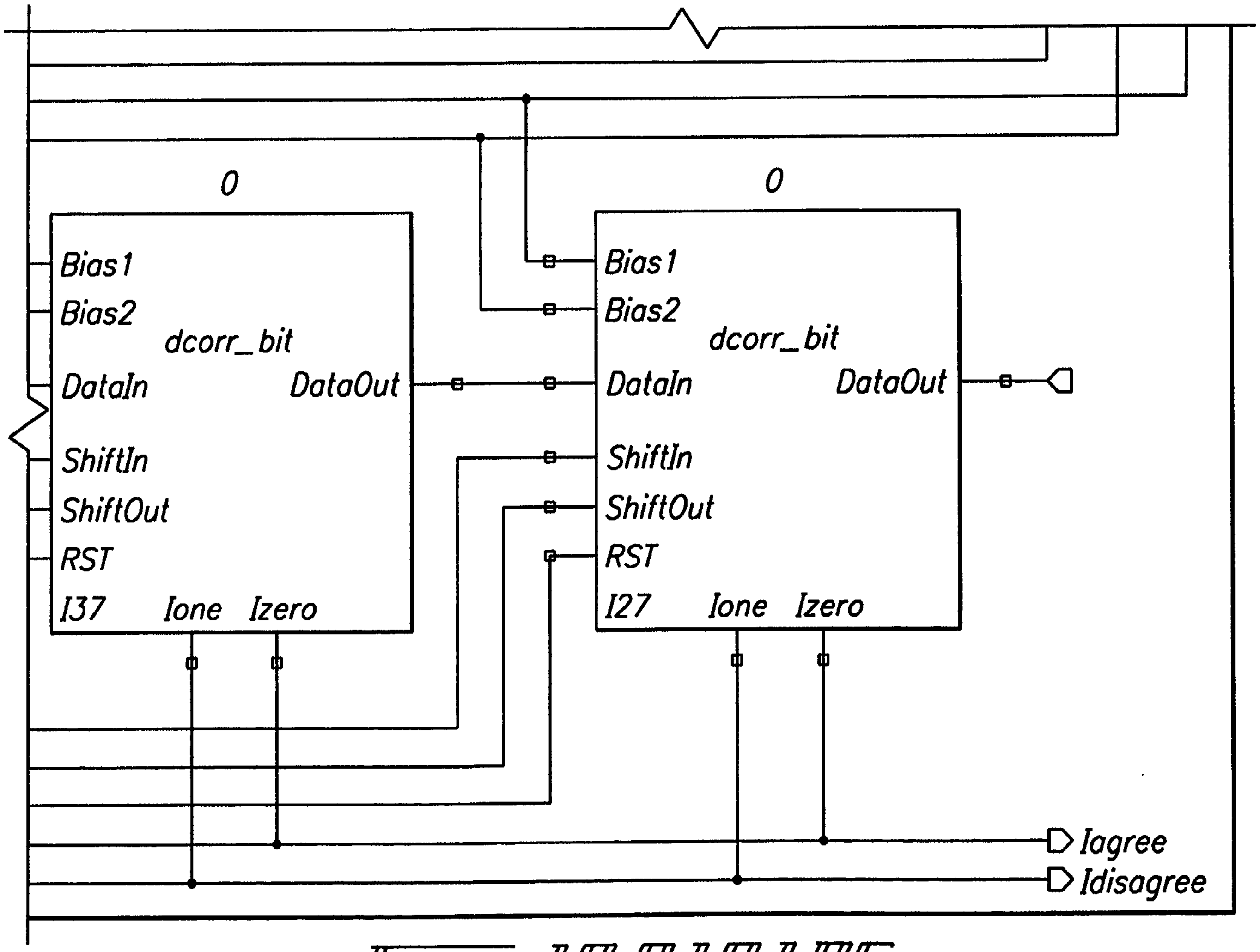

Fig 10.0101BG

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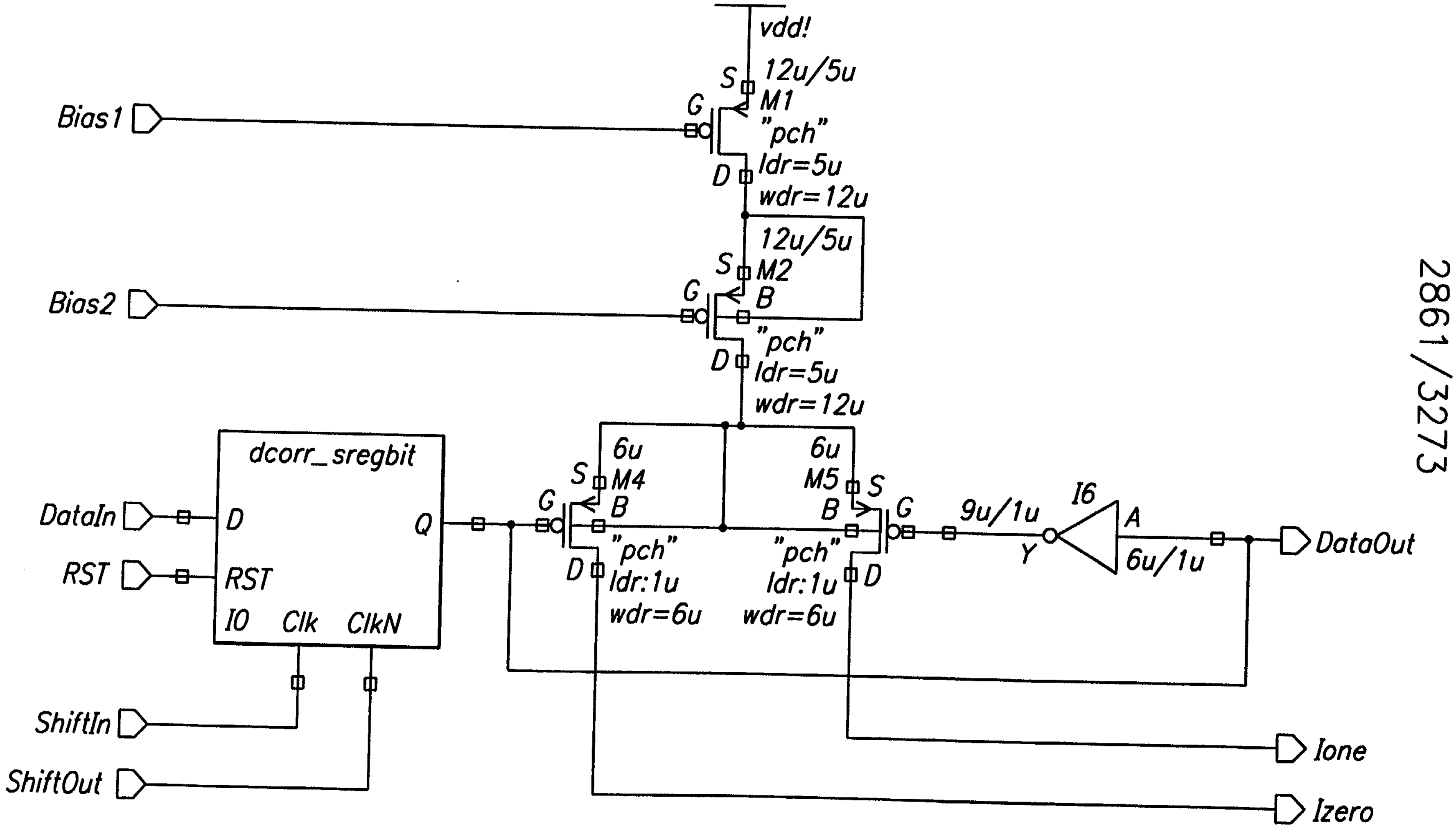


Fig 10.010101

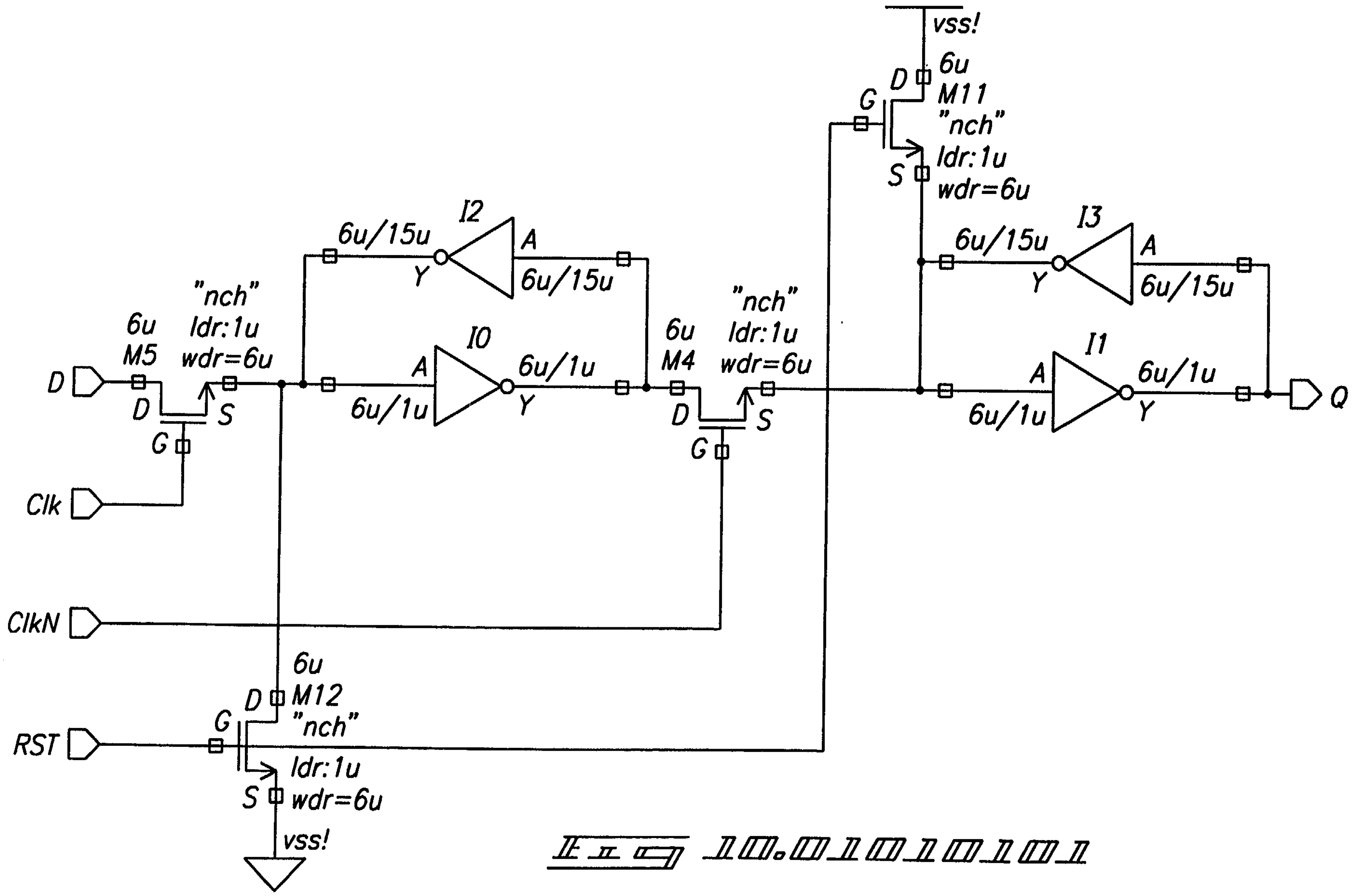


Fig 10.01010101

10.0102AA	10.0102AB	10.0102AC	10.0102AD	10.0102AE	10.0102AF	10.0102AG	10.0102AH	10.0101AI	10.0102AJ	10.0102AK	10.0102AL	10.0102AM	10.0102AN
10.0102BA	10.0102BB	10.0102BC	10.0102BD	10.0102BE	10.0102BF	10.0102BG	10.0102BH	10.0101AI	10.0102BJ	10.0102BK	10.0102BL	10.0102BM	10.0102BN
									10.0102CJ	10.0102CK	10.0102CL	10.0102CM	10.0102CN

Fig 10.0102

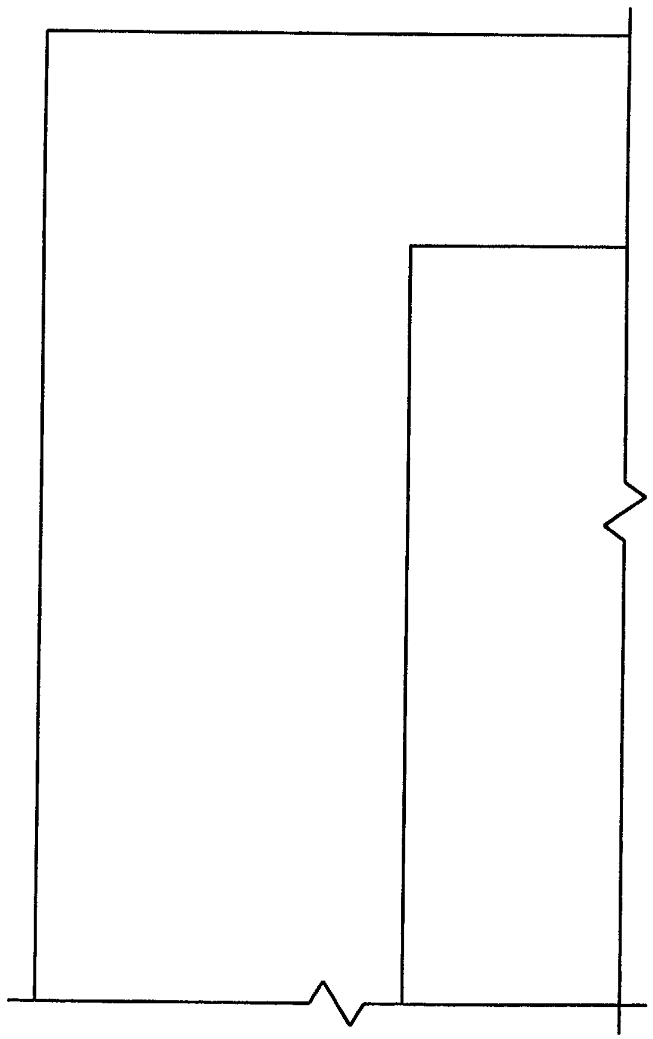


Fig 10.0102AA

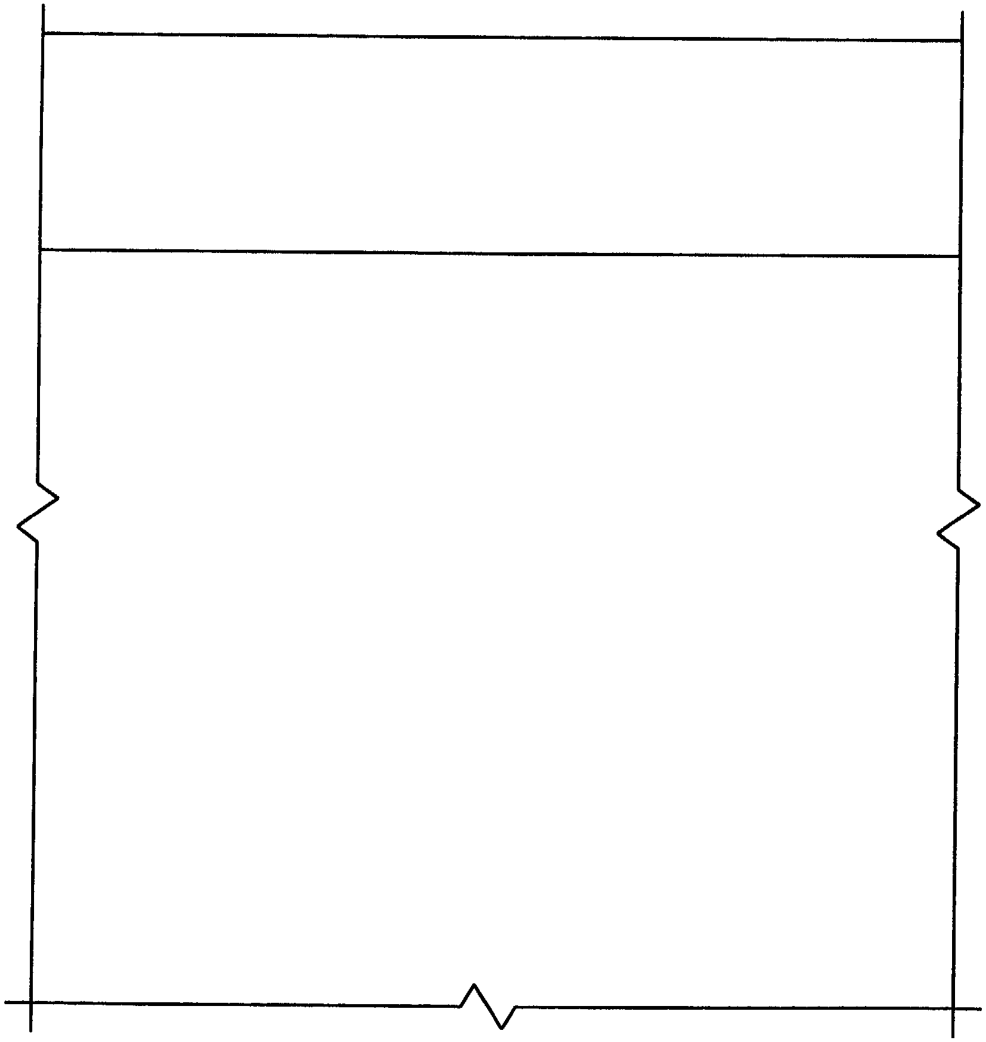


Fig 10.0102AB

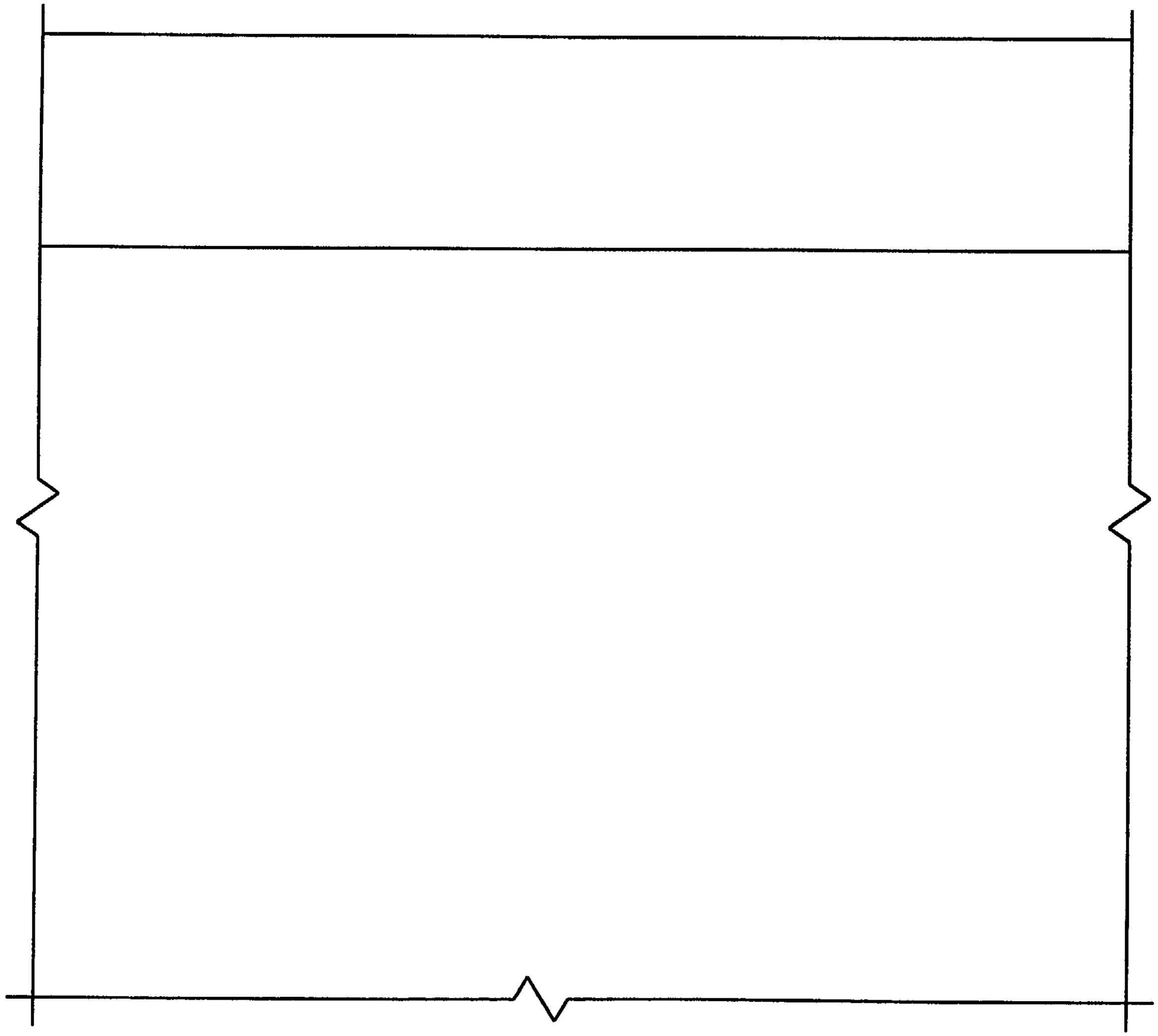


FIG 10.0102AC

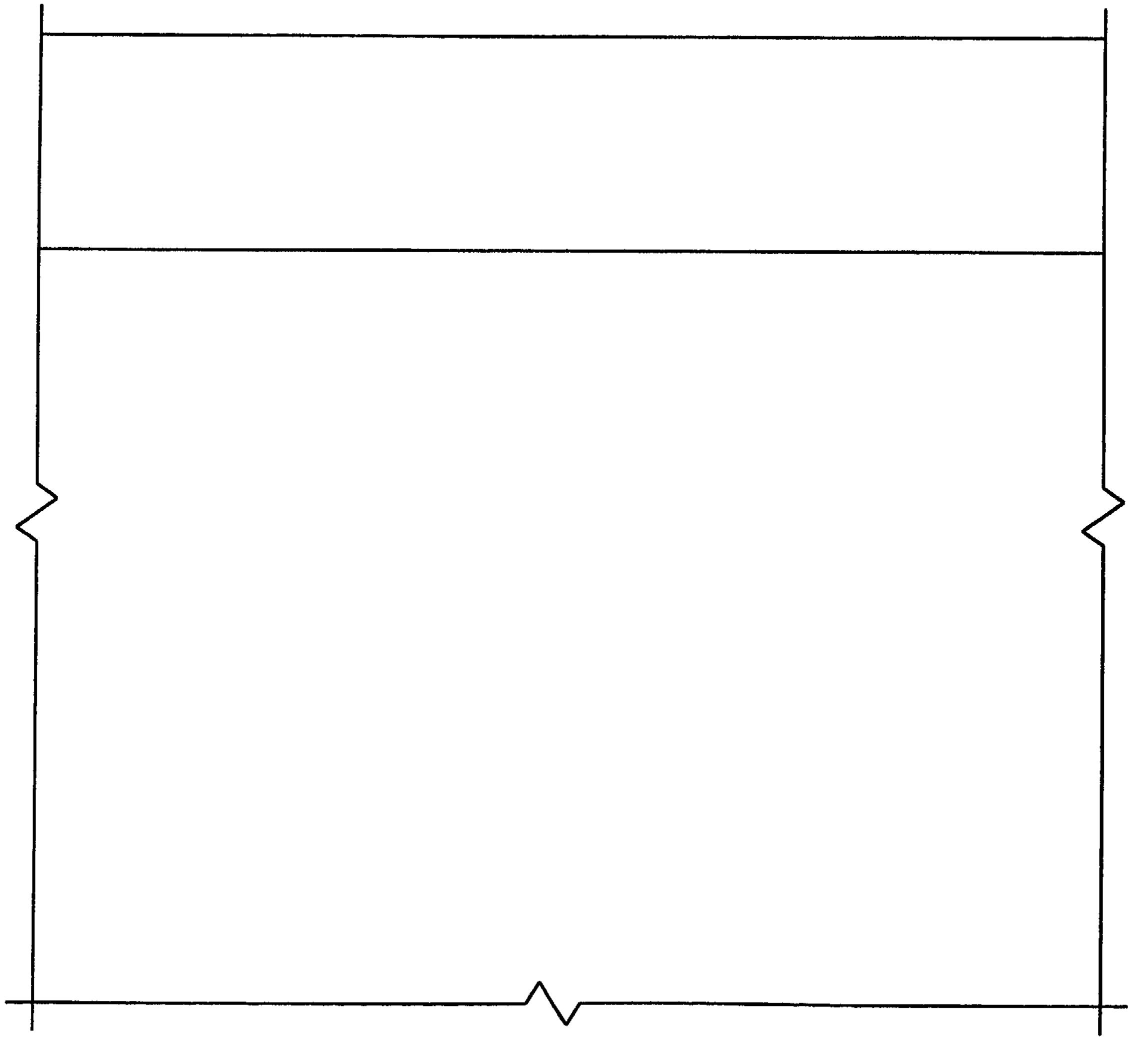


Fig 10.0102AD

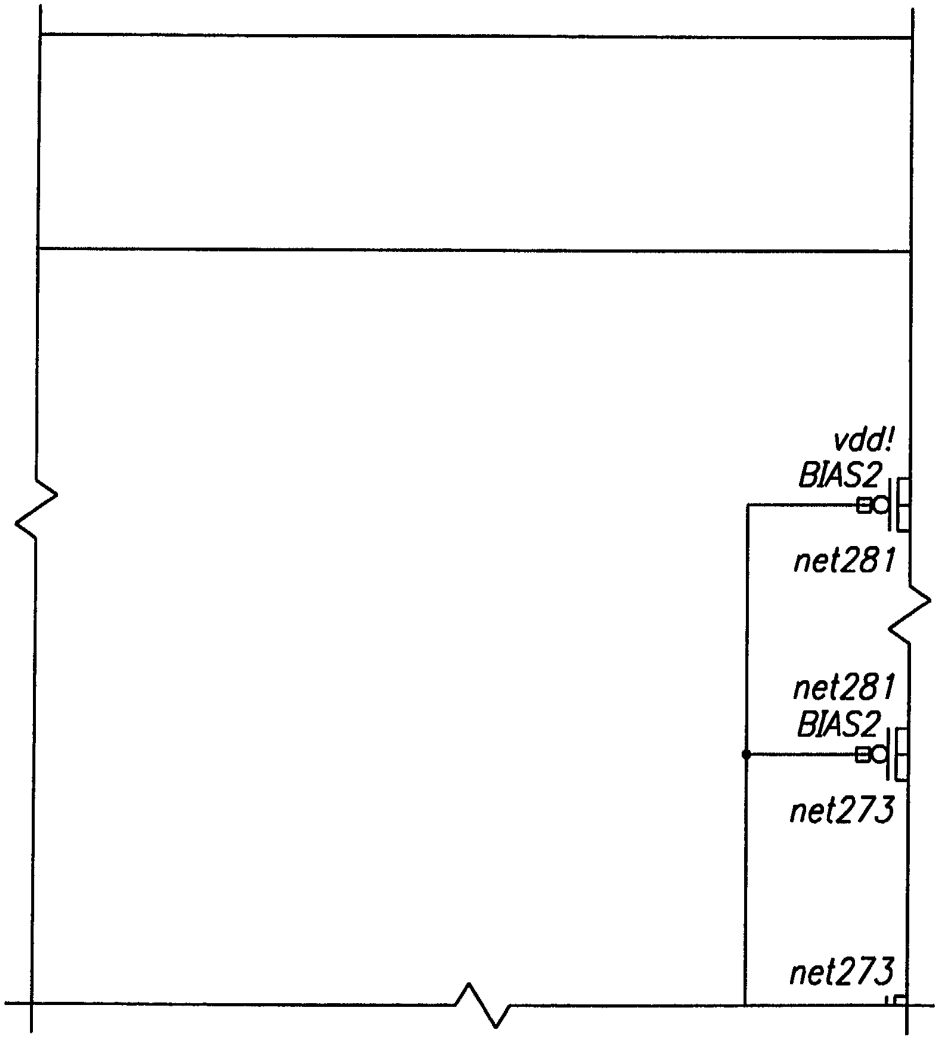


Fig 10.0102AE

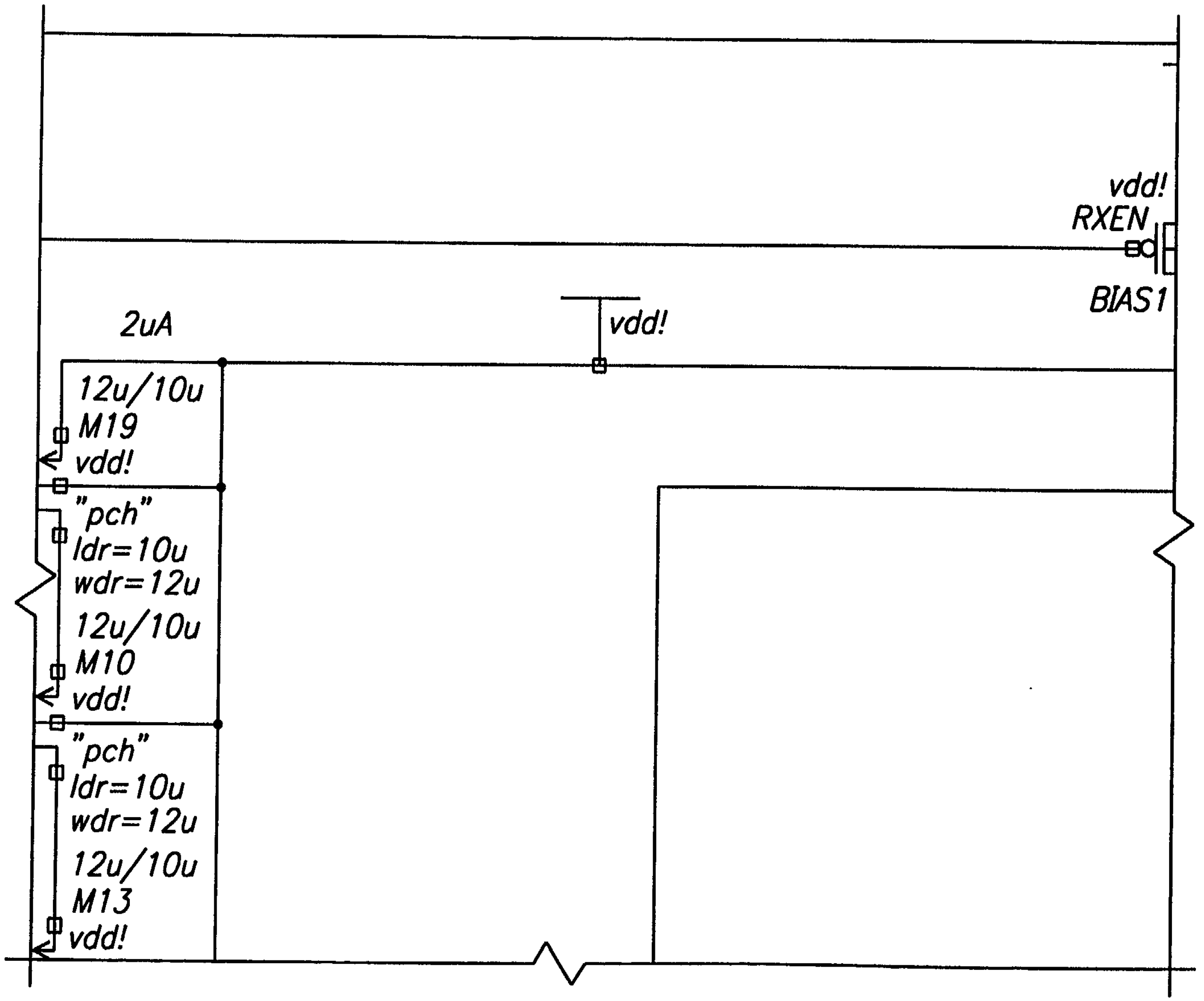


Fig 10.0102AF

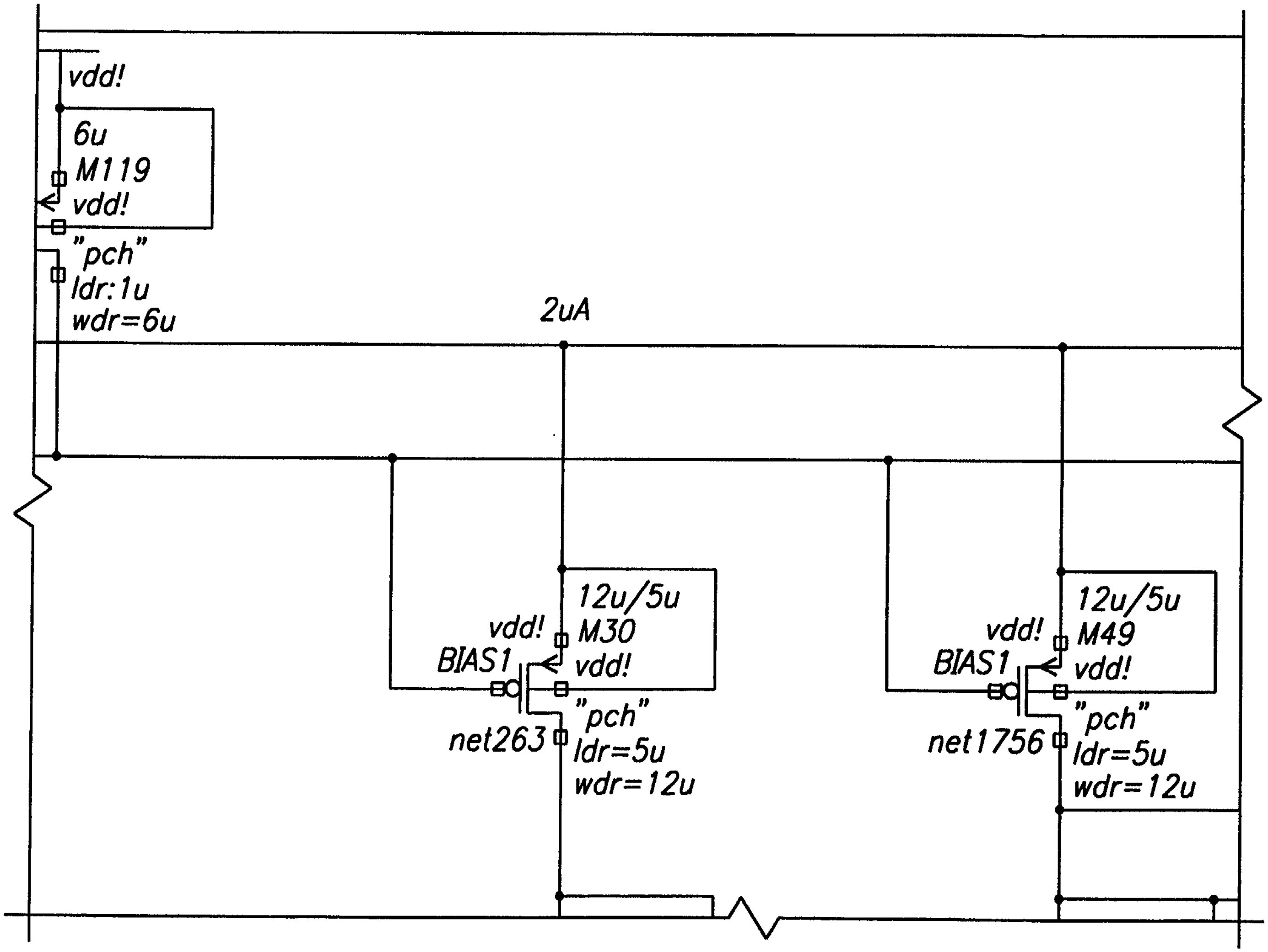


FIG 10.01.02AG

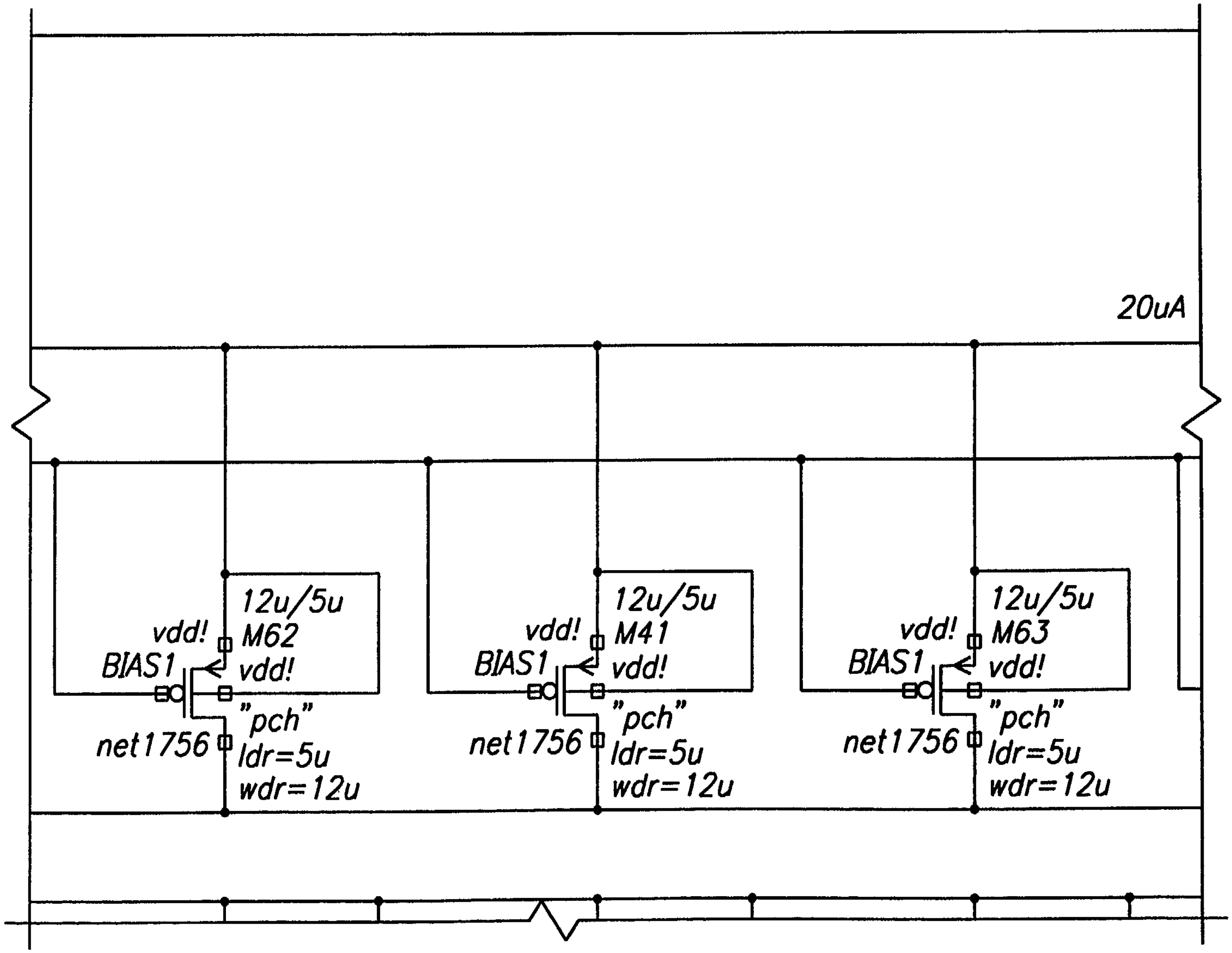


Fig 10.0102AH

09822063.061101

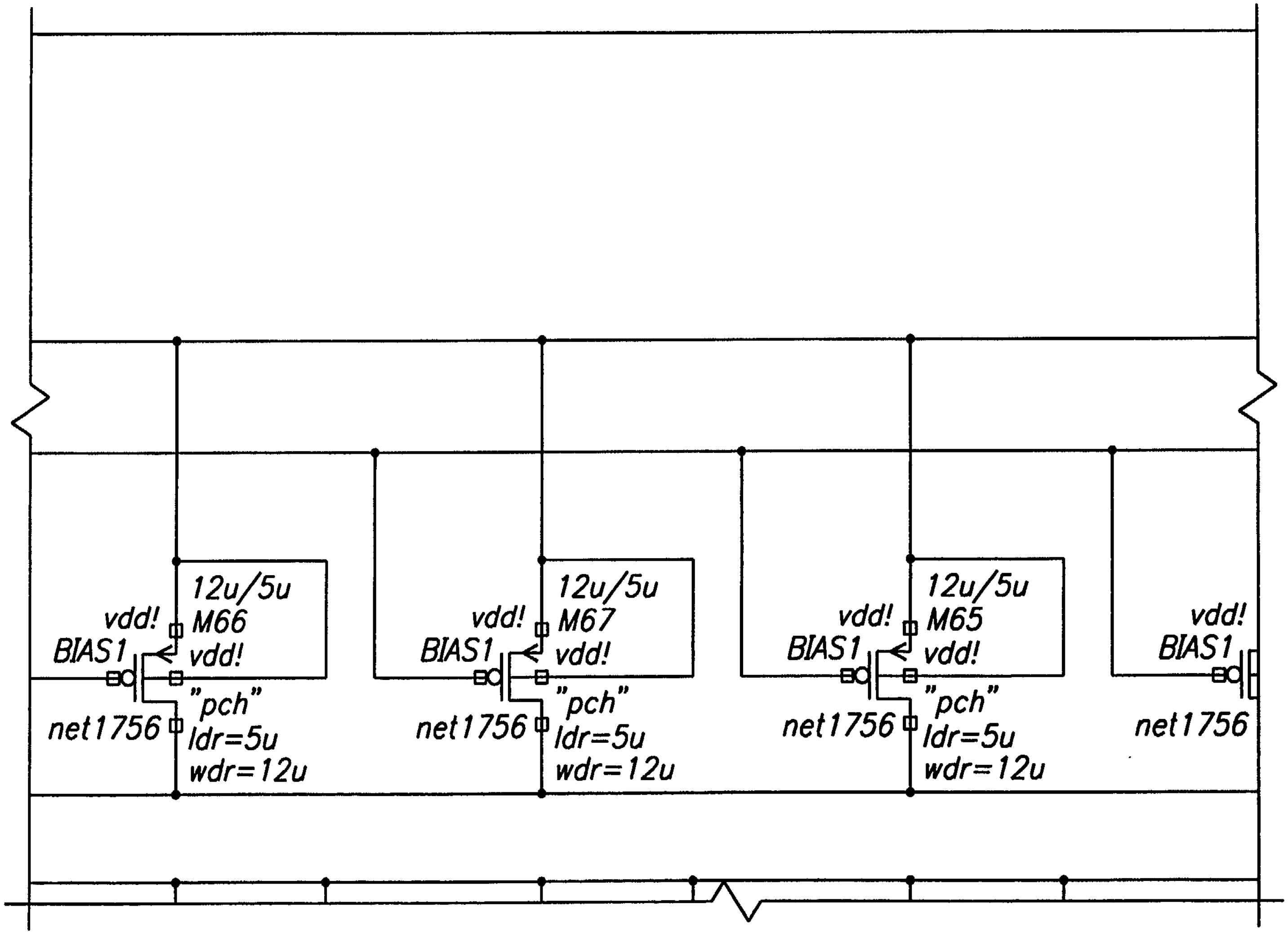


FIG 10.01.02A1

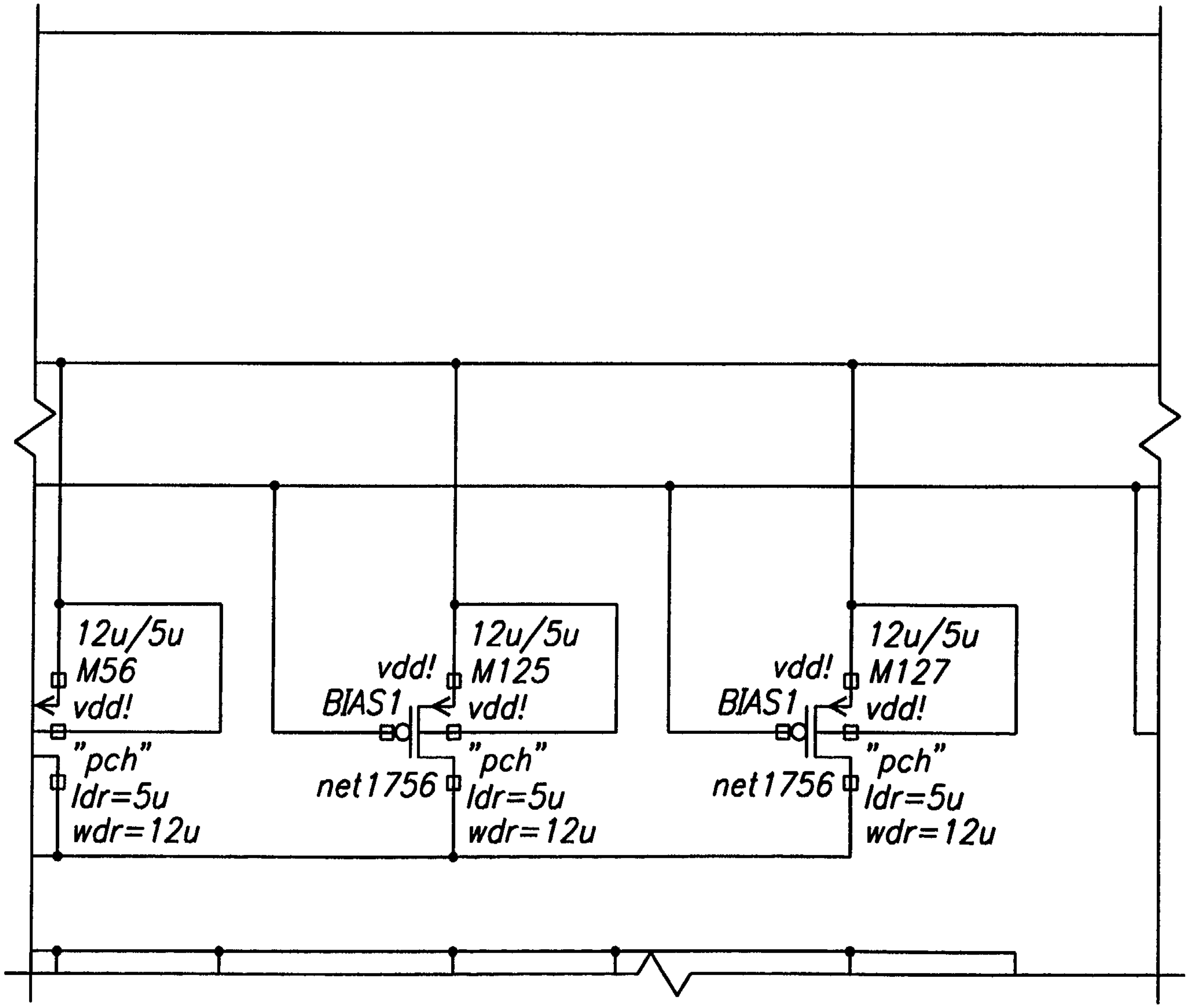

12u/5u
M56
vdd!
"pch"
ldr=5u
wdr=12u
vdd!
BIAS1
net1756
12u/5u
M125
vdd!
"pch"
ldr=5u
wdr=12u
vdd!
BIAS1
net1756
12u/5u
M127
vdd!
"pch"
ldr=5u
wdr=12u

Fig 10.10.2A

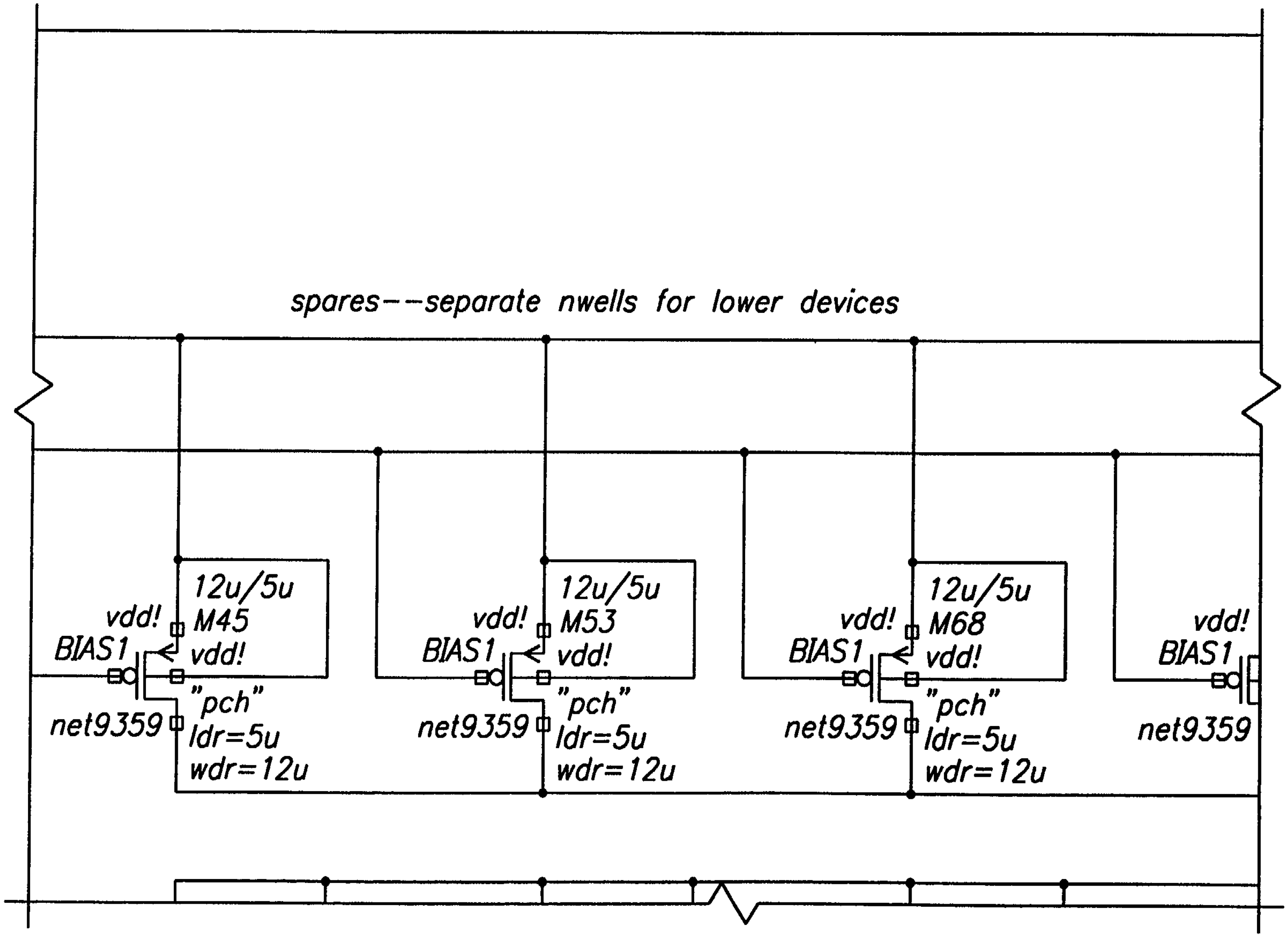


Fig 10.0102AK

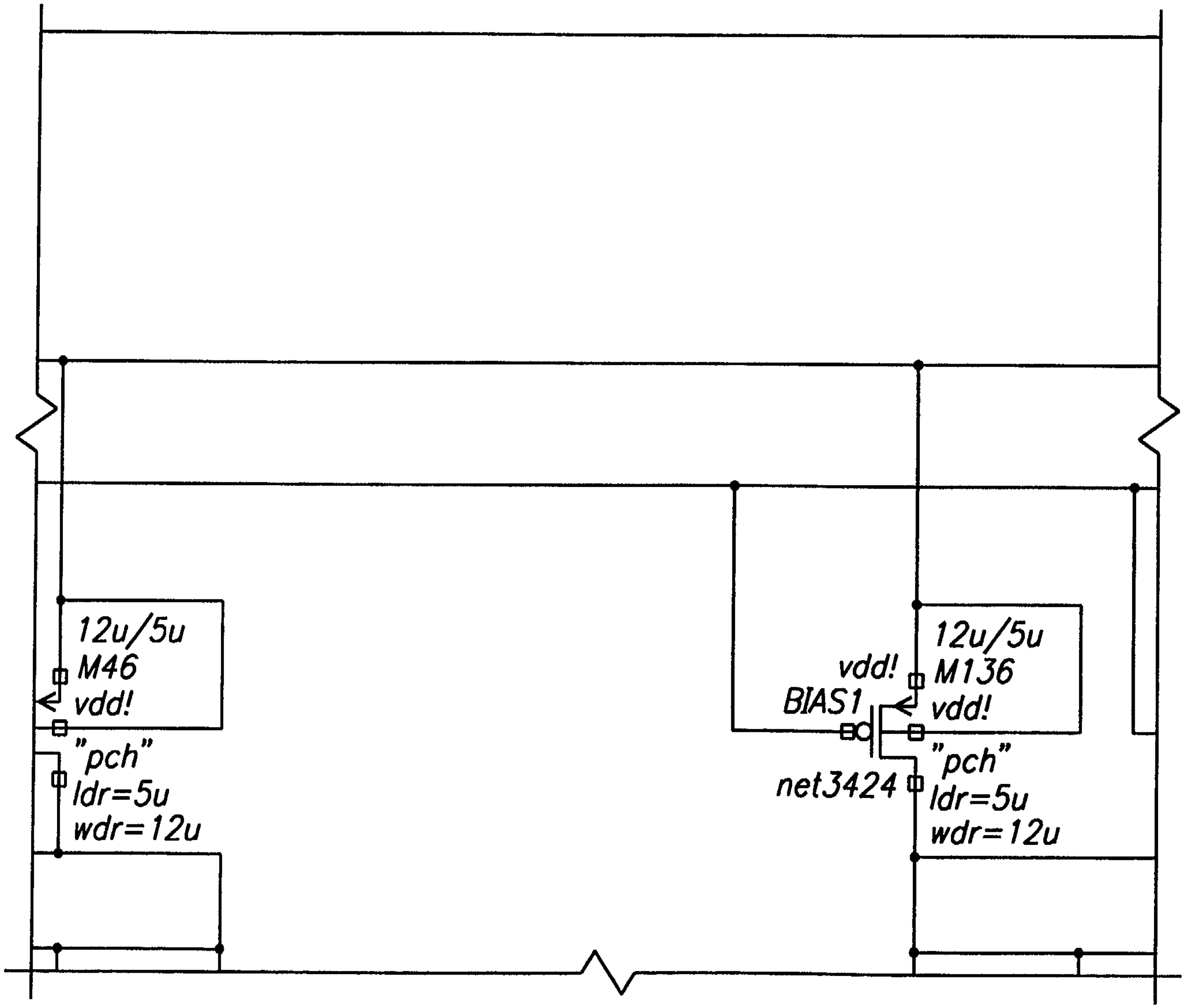


Fig 10.0102AL

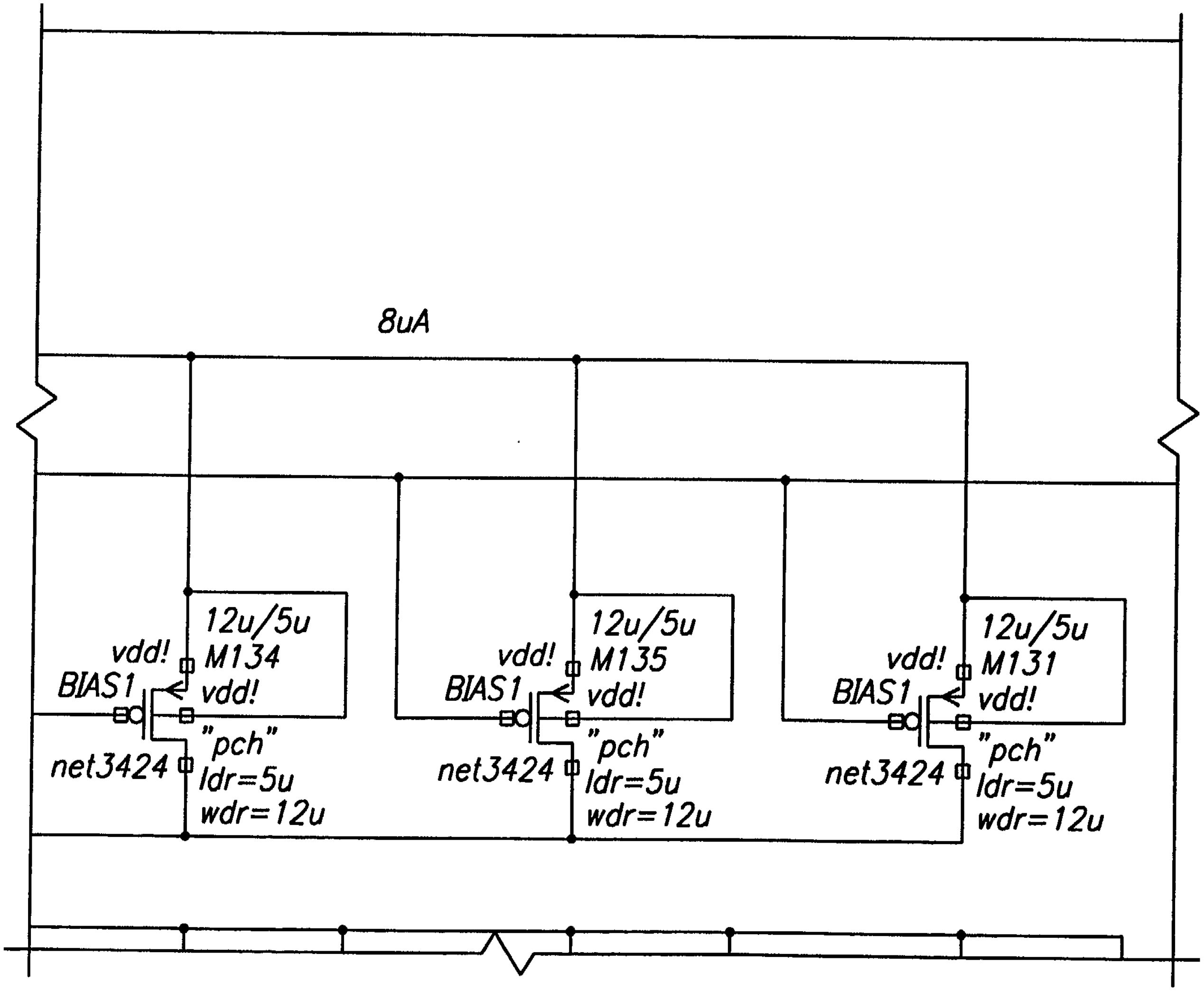


FIG 10.0102AM

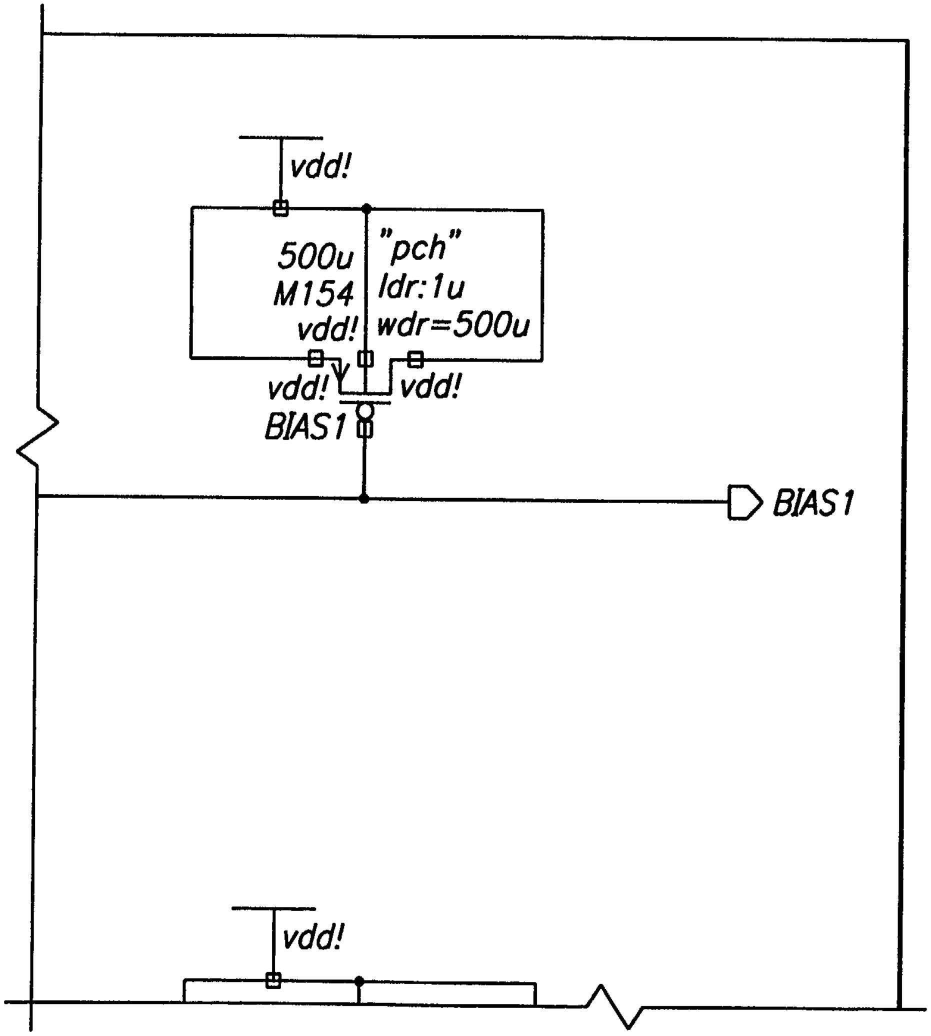


Fig 10.0102AN

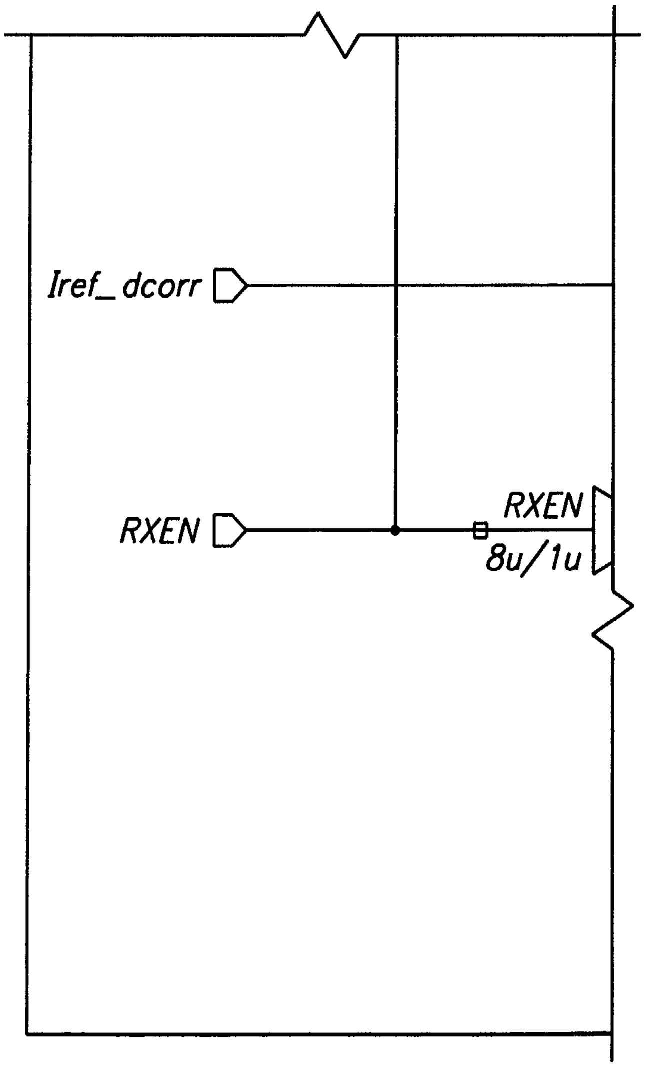


Fig 10.0102BA

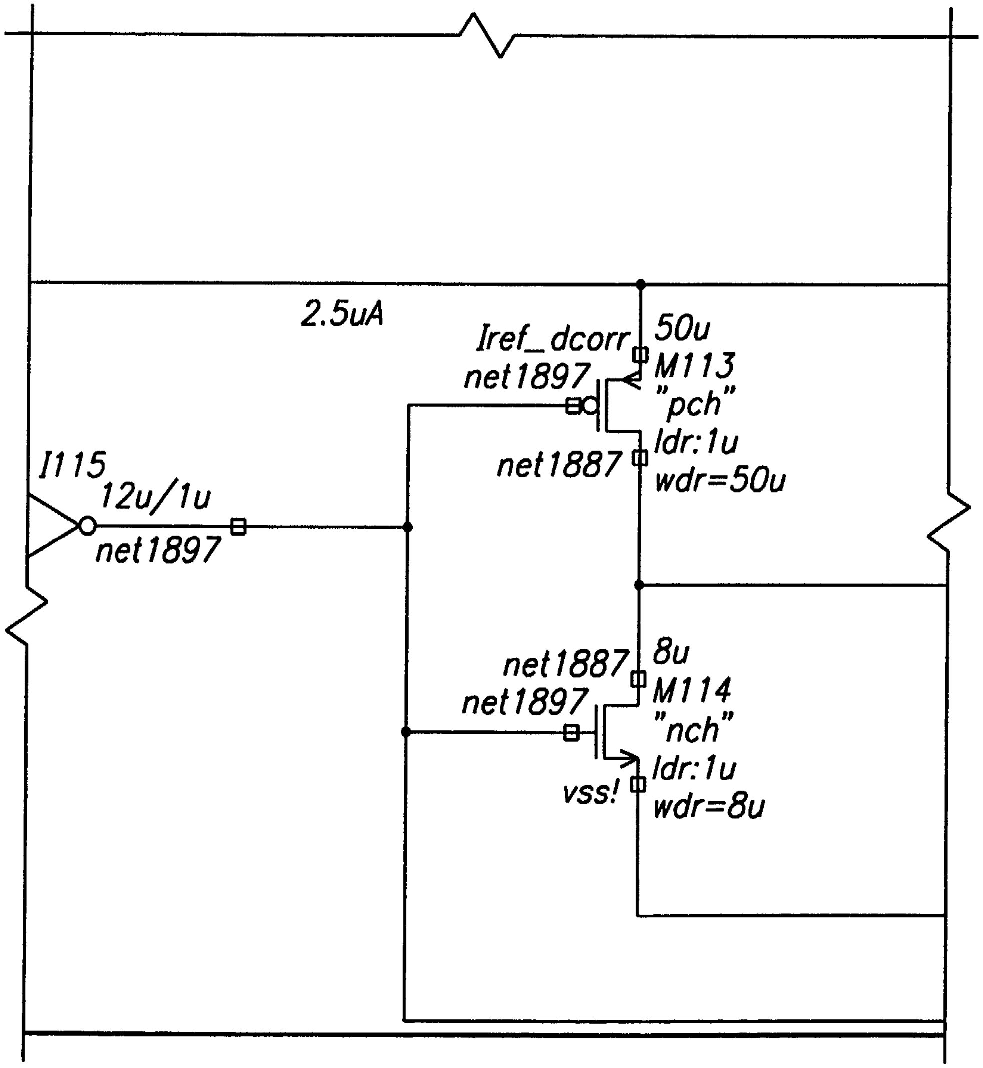


Fig 10.0102BB

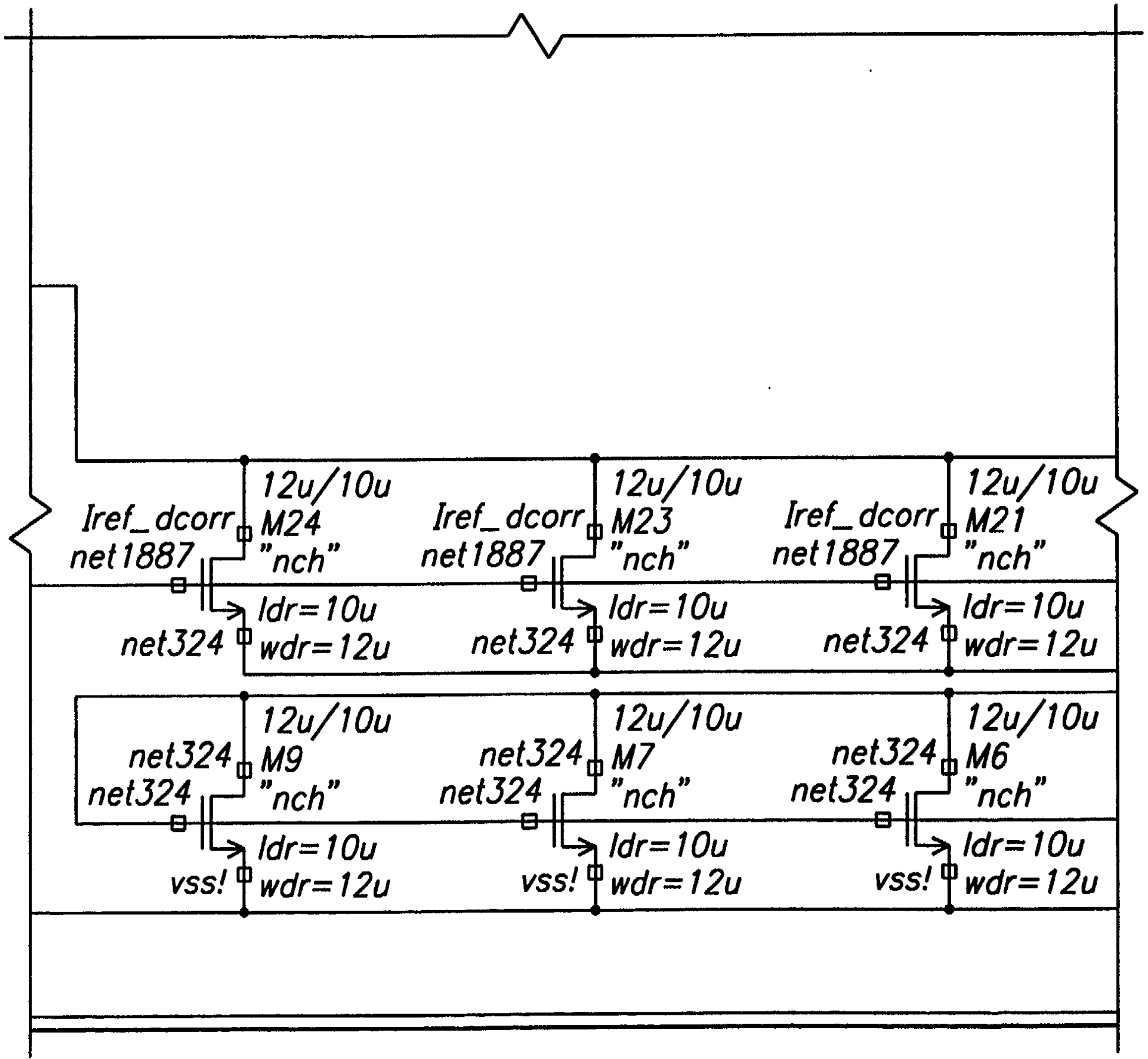


Fig 10.0102BC

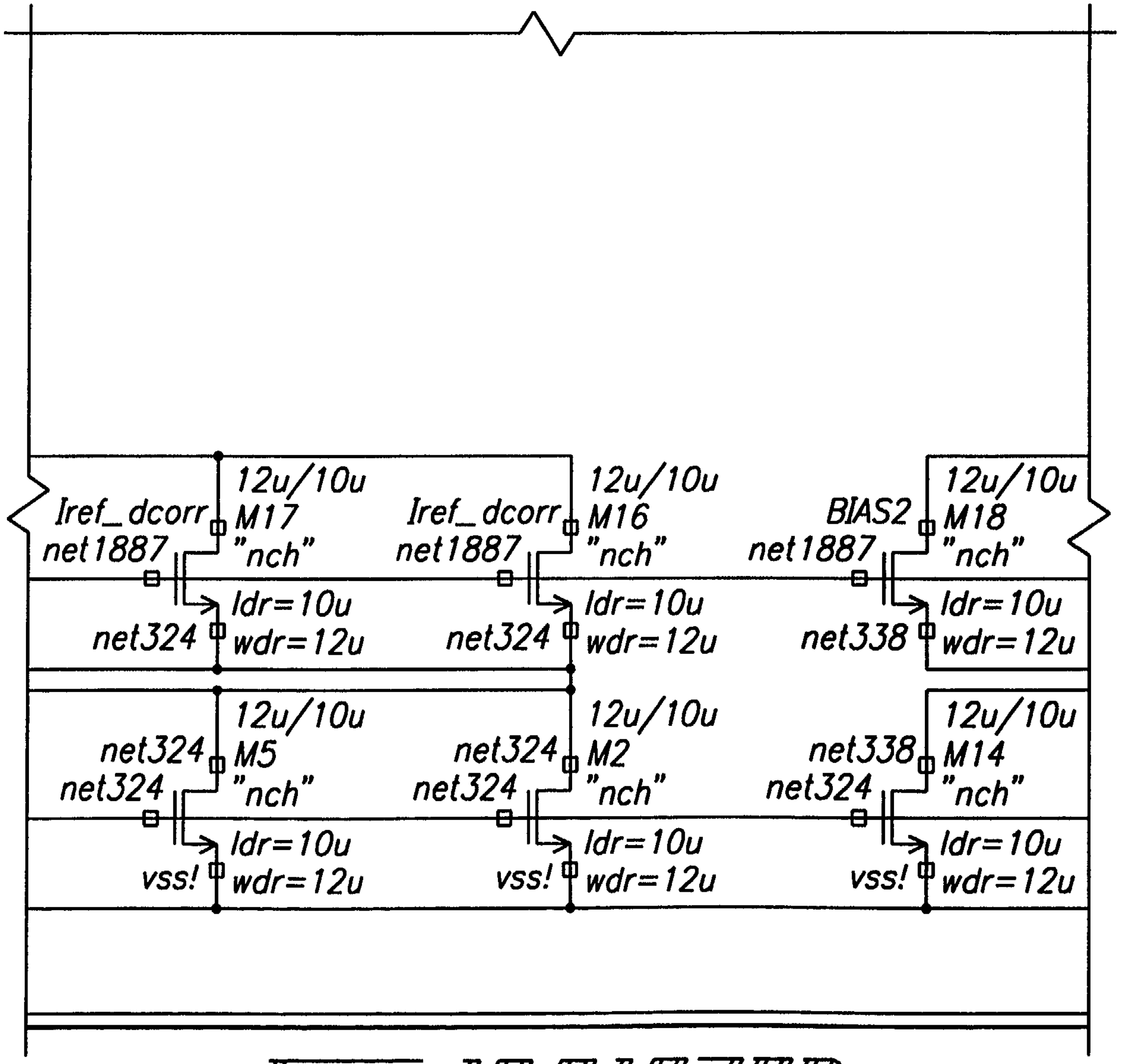


Fig 10.0102BD

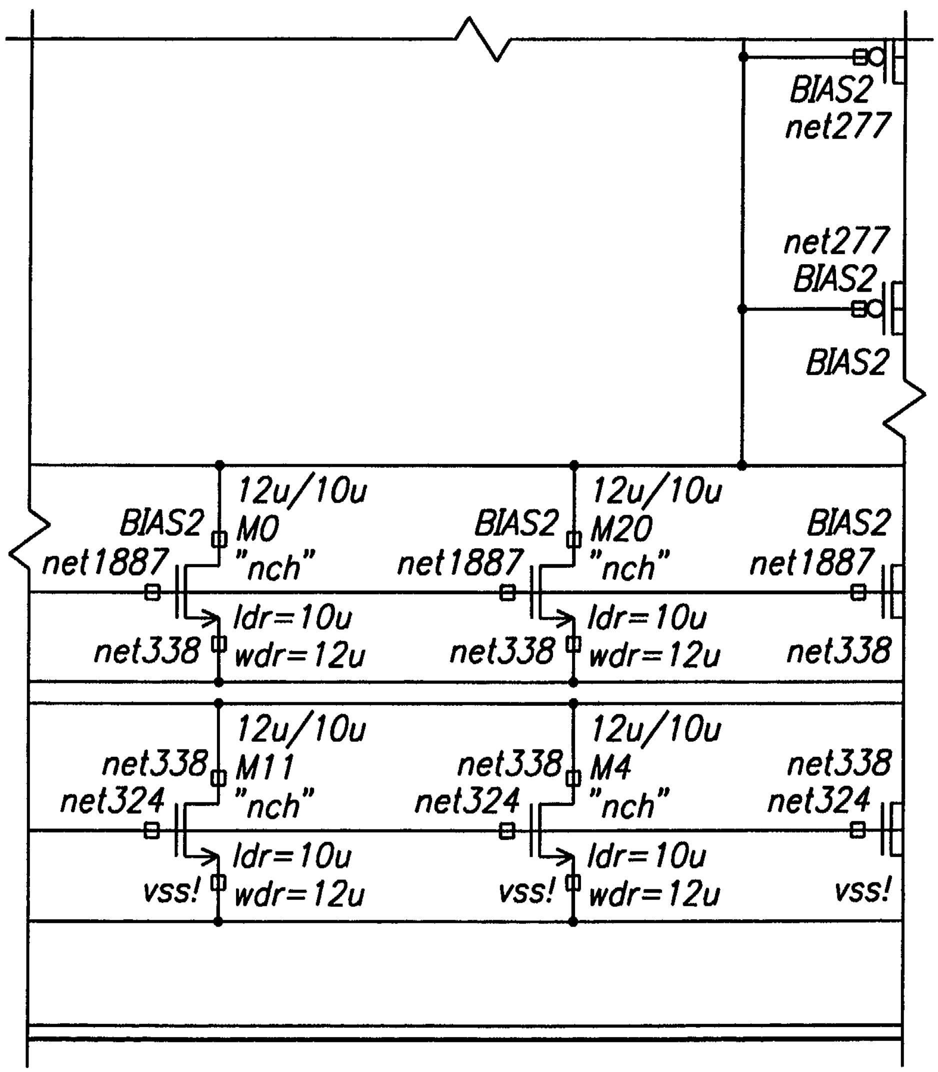


FIG 10.0102BE

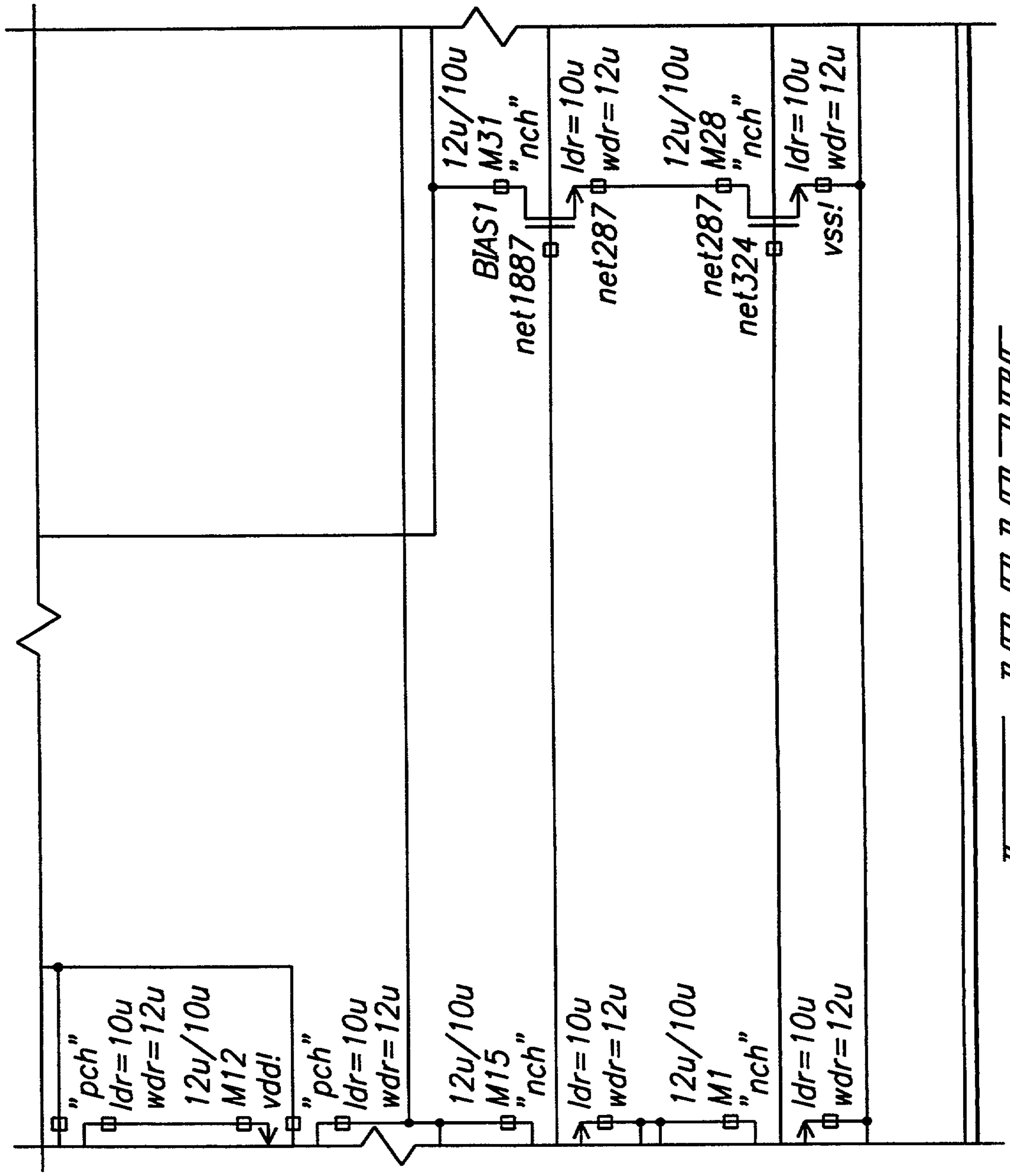


FIG 10.01.02BF

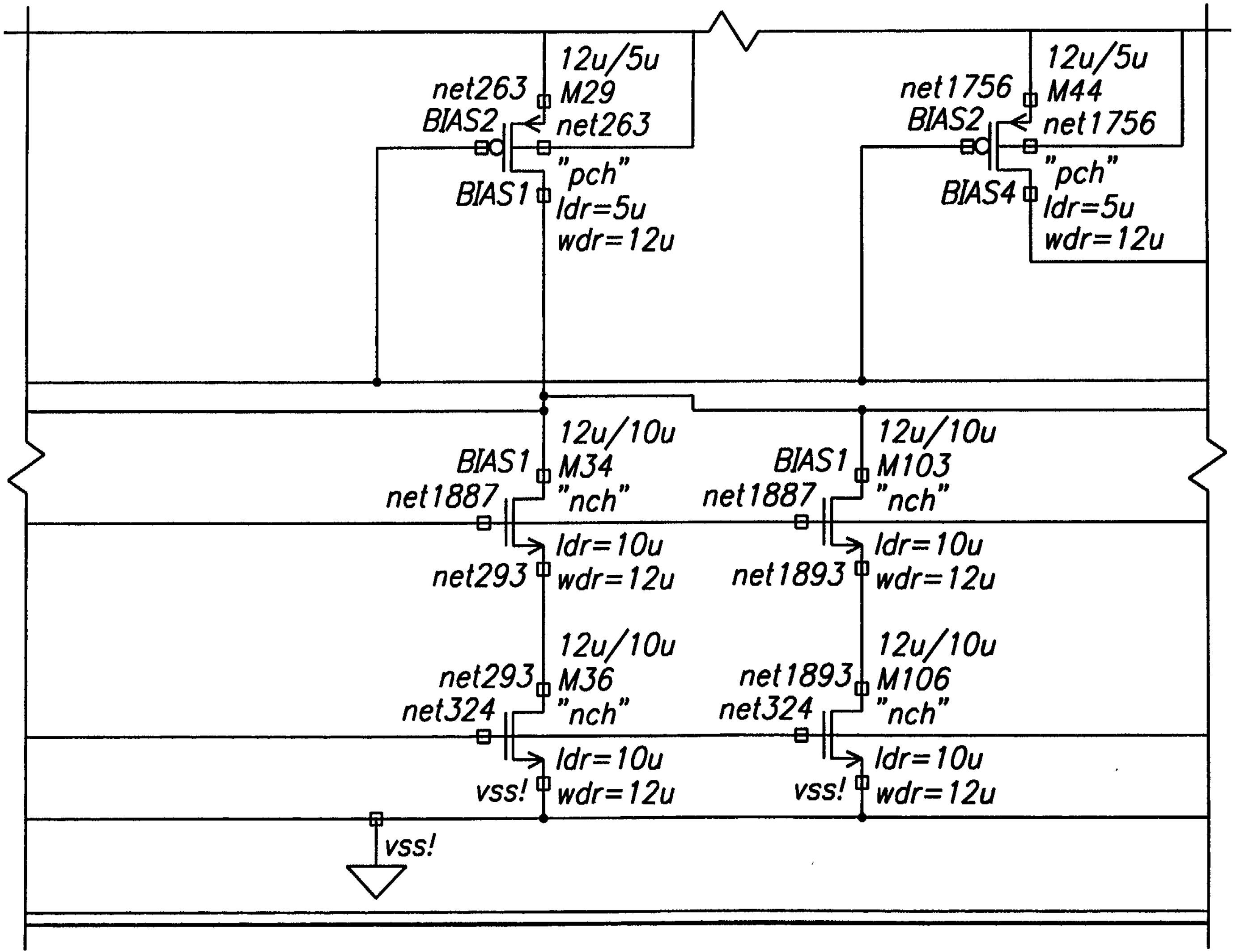


Fig 10.0102BG

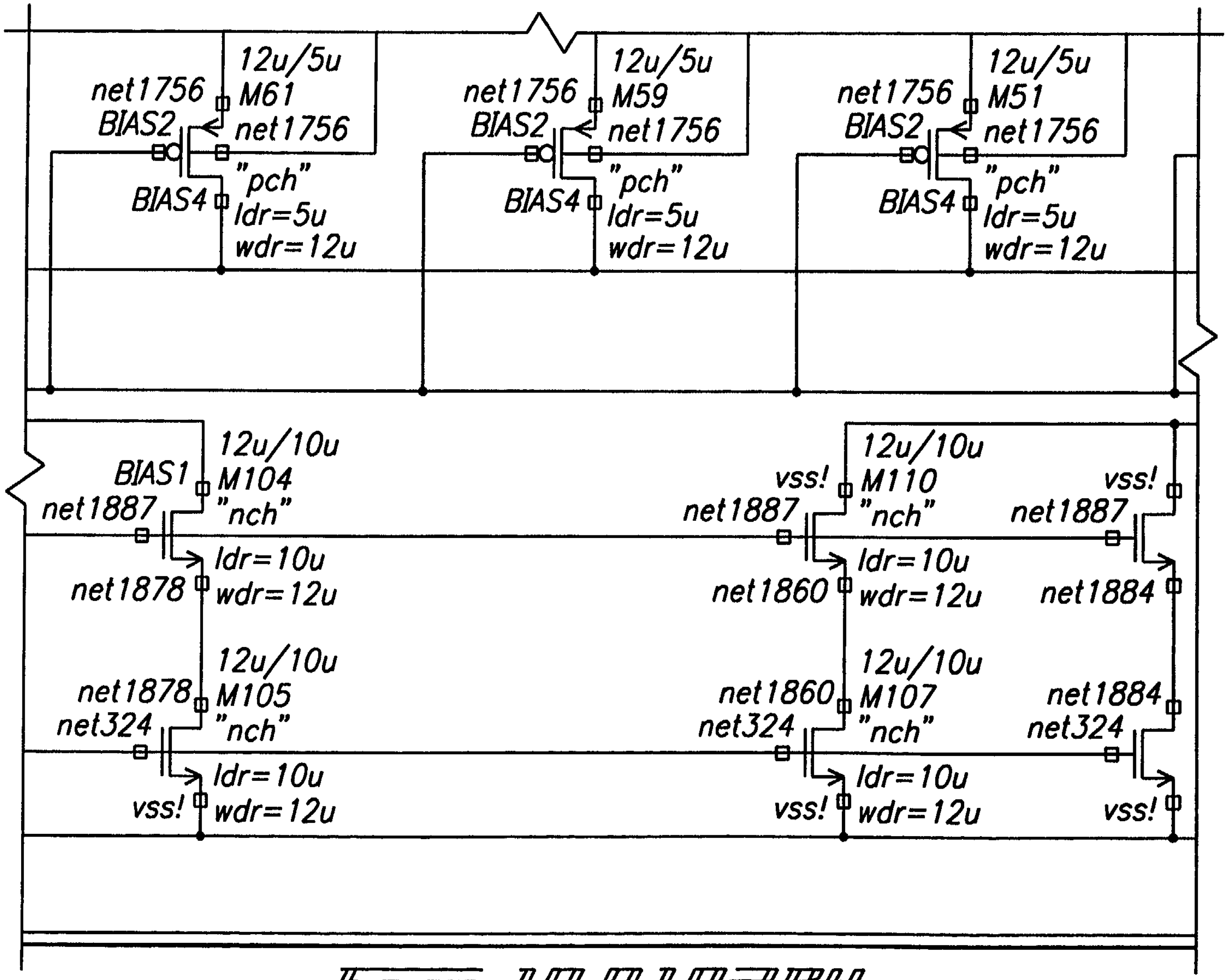


Fig 10.0102BH

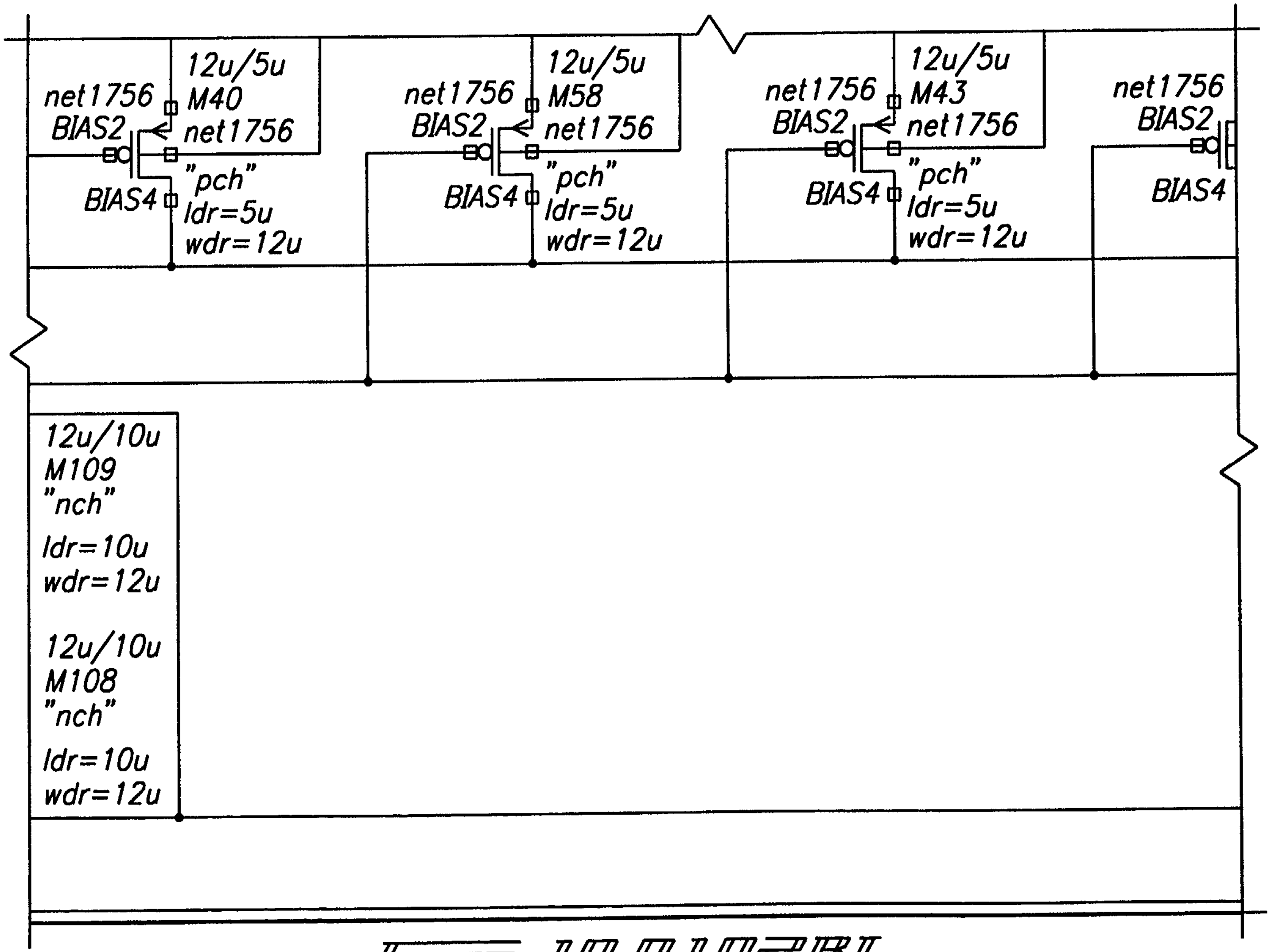


Fig 10.0102BI

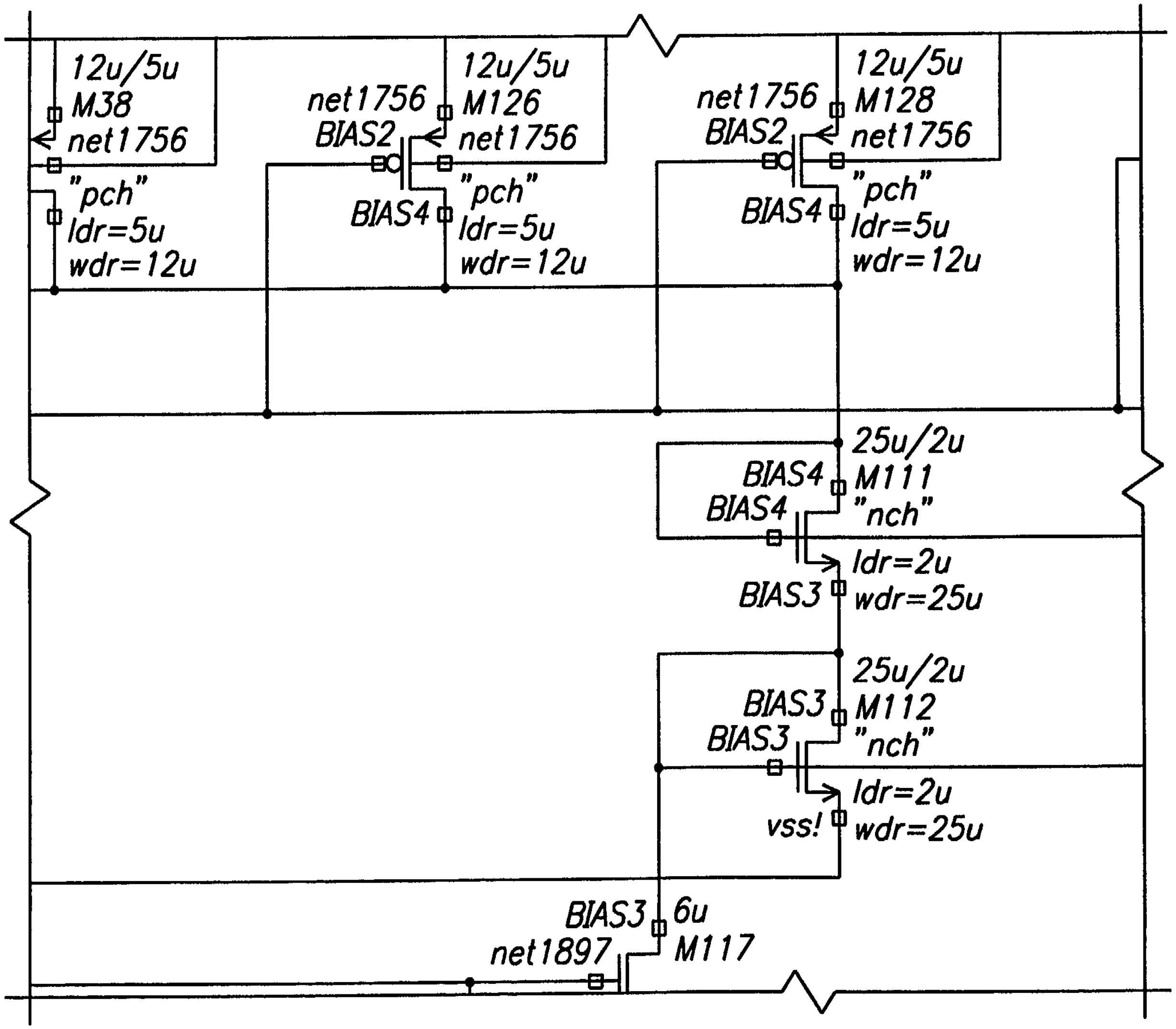


Fig 10.0102Bd

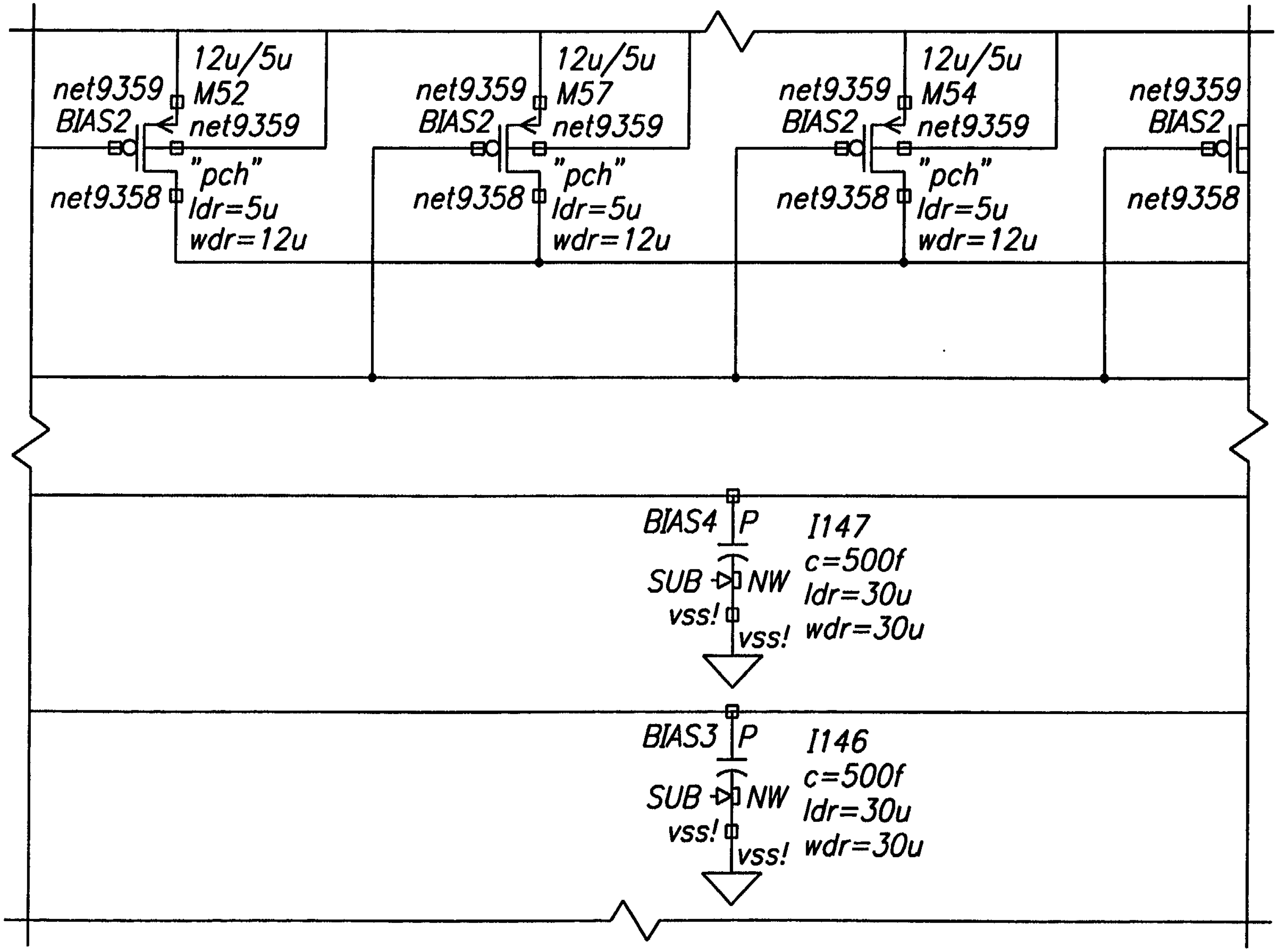


Fig 10.0102BK

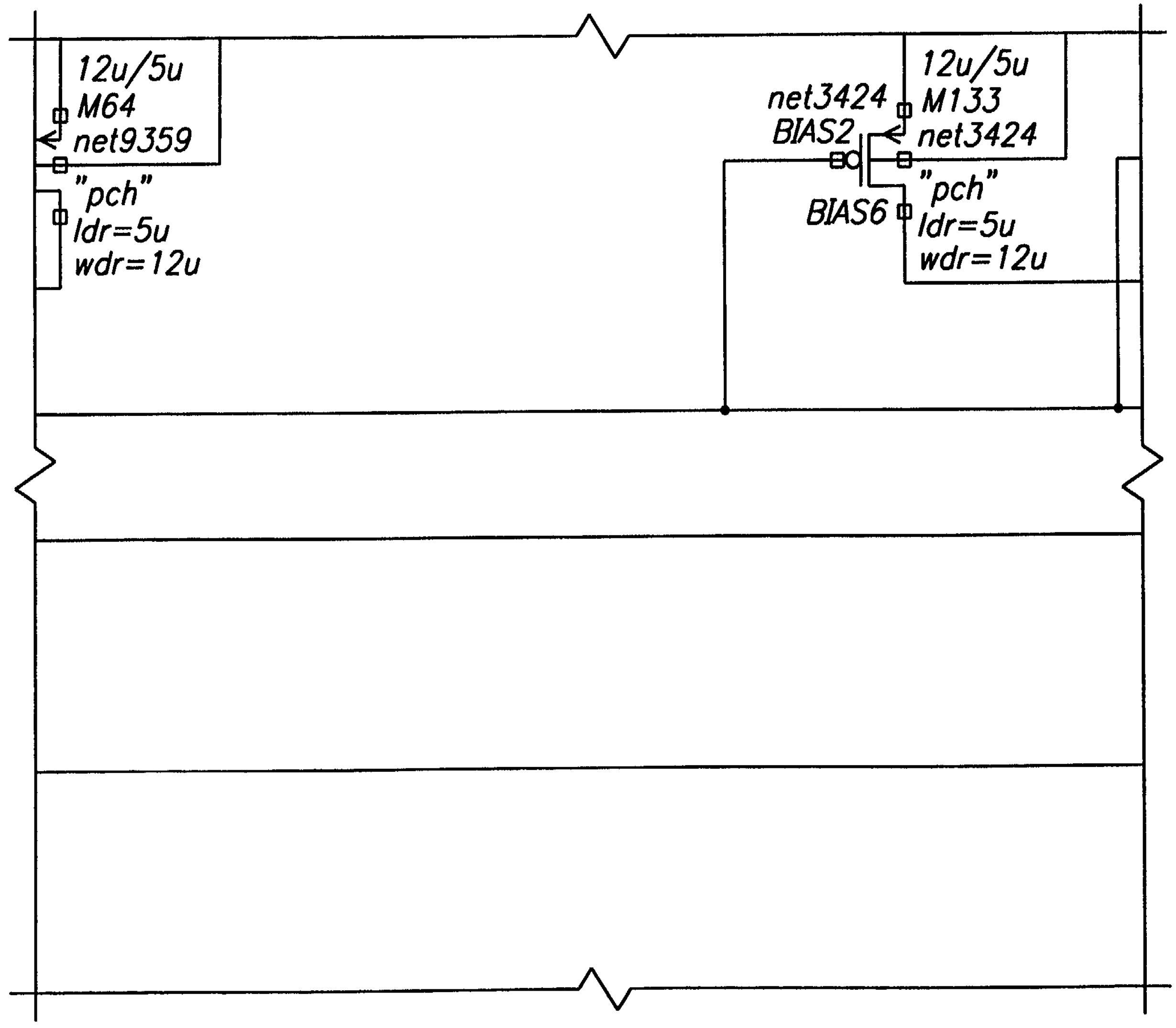


Fig 10.0102BL

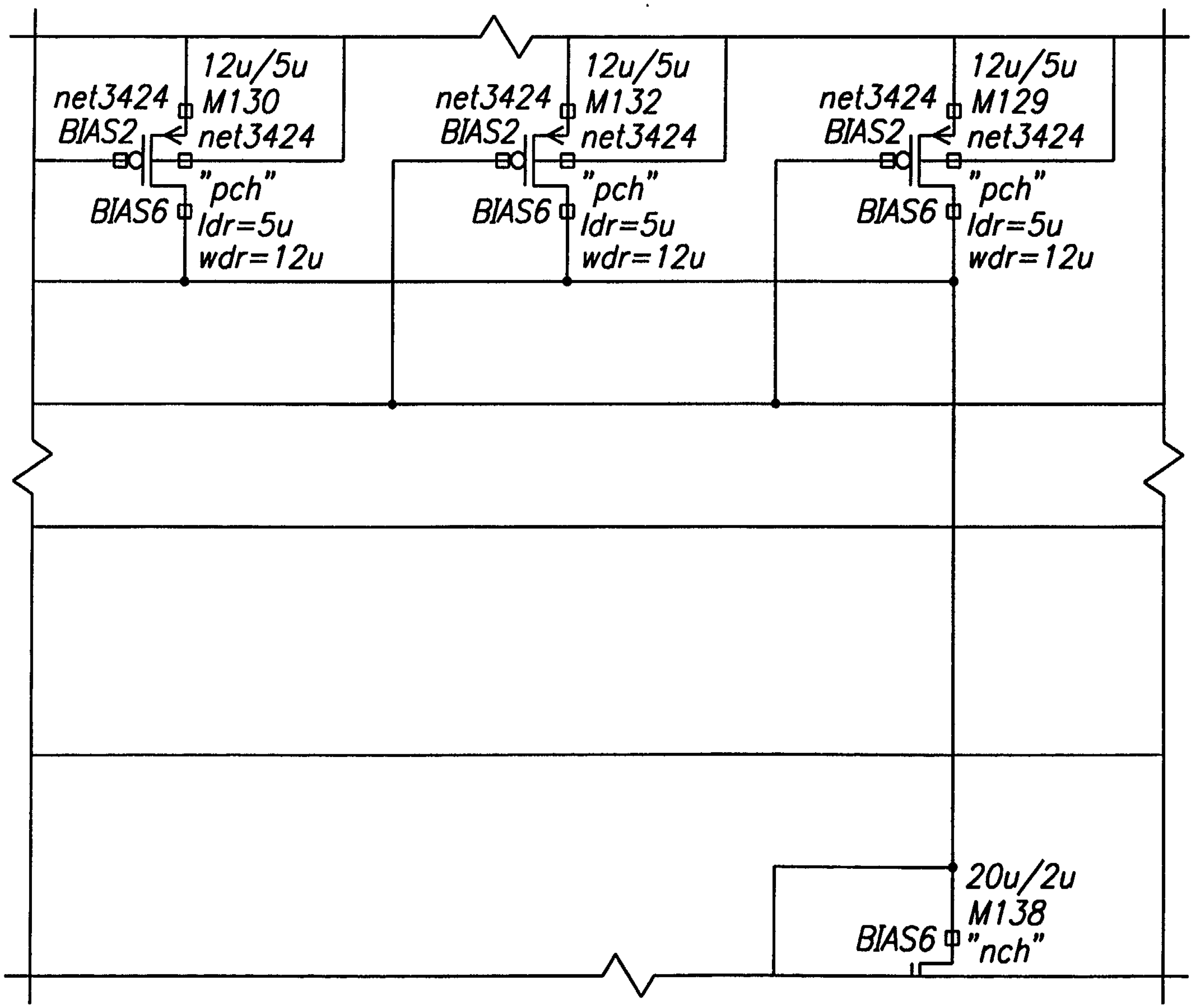


Fig 10.0102BM

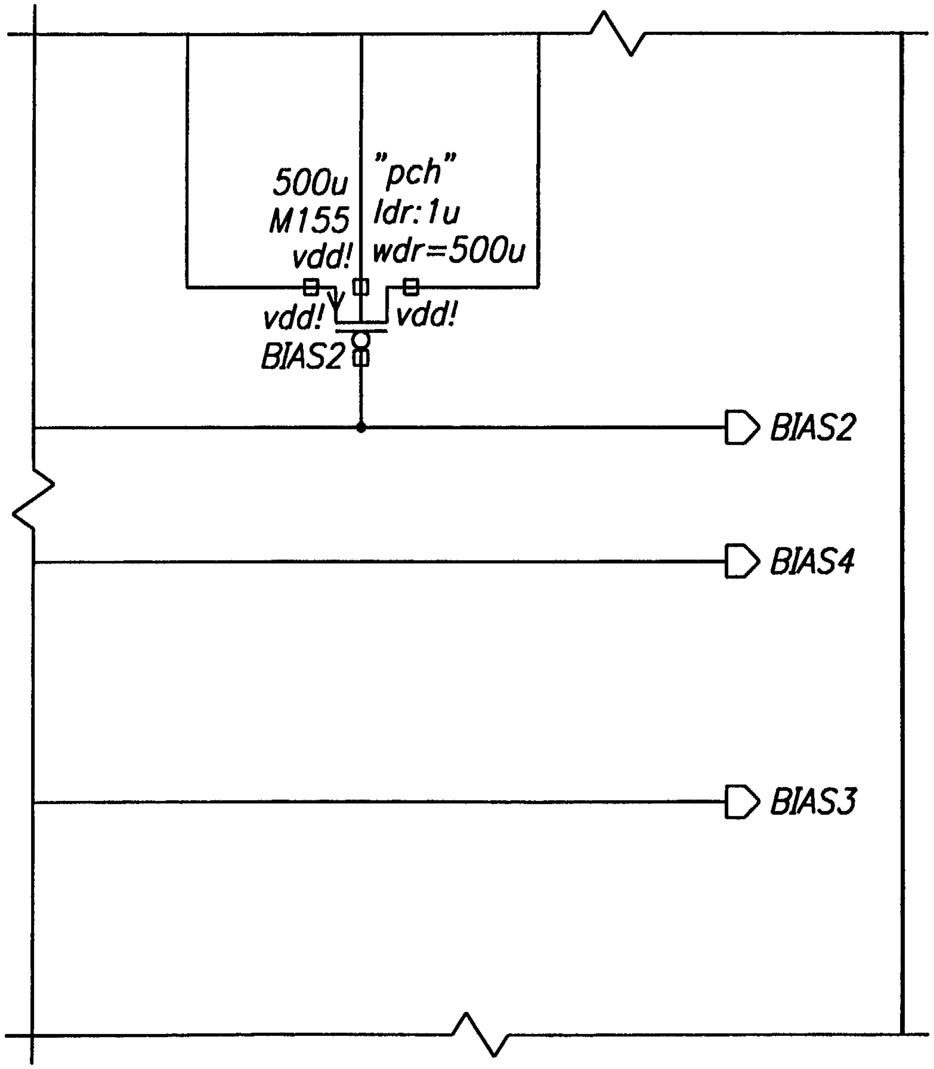


Fig 10.0102BN

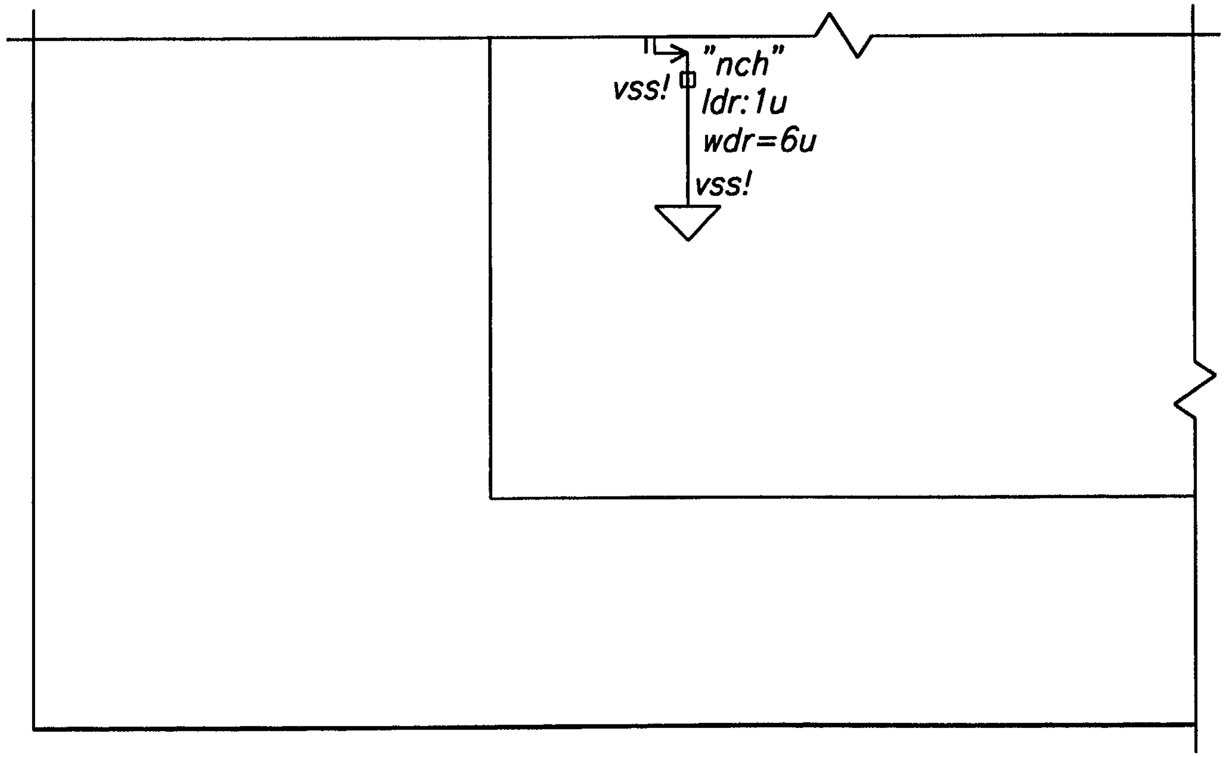


Fig 10.0102Cd

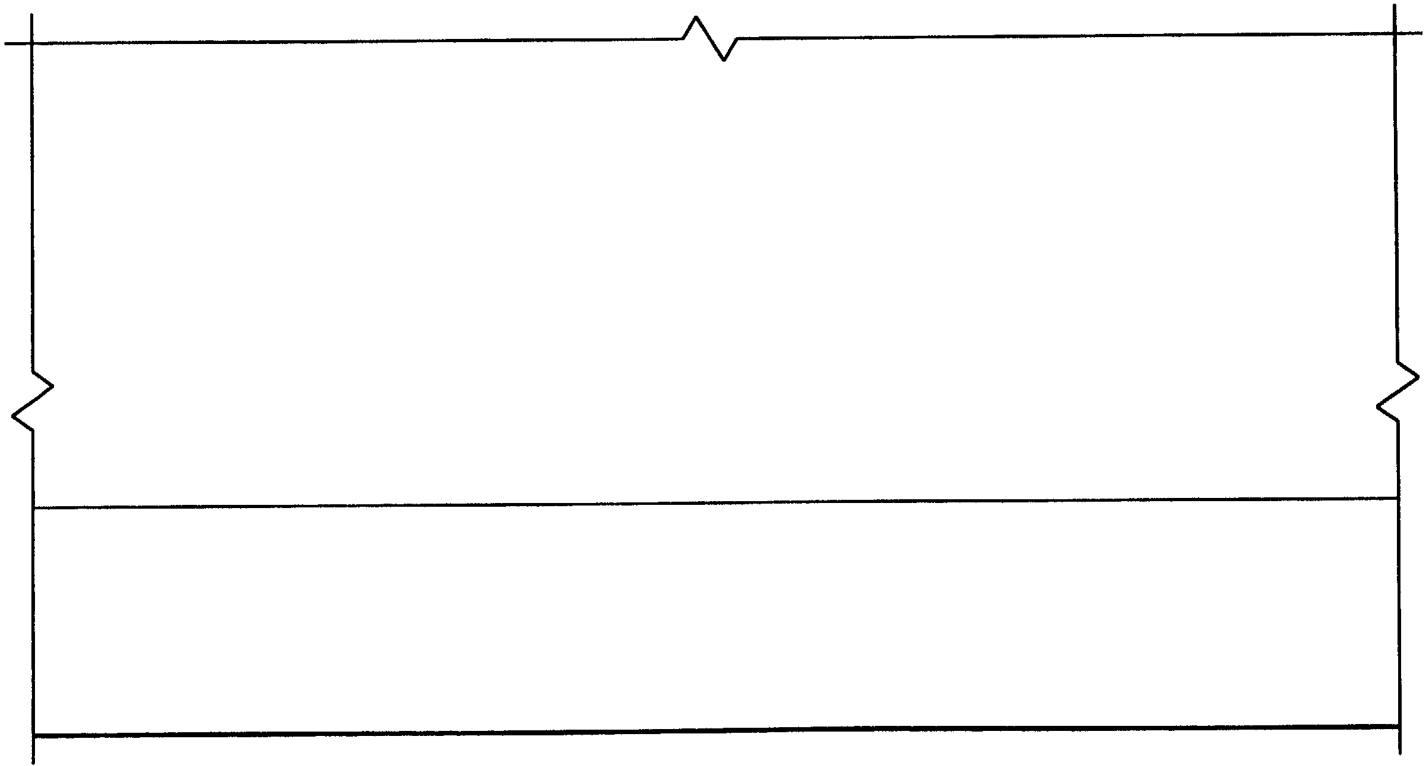


Fig 10.01102CK

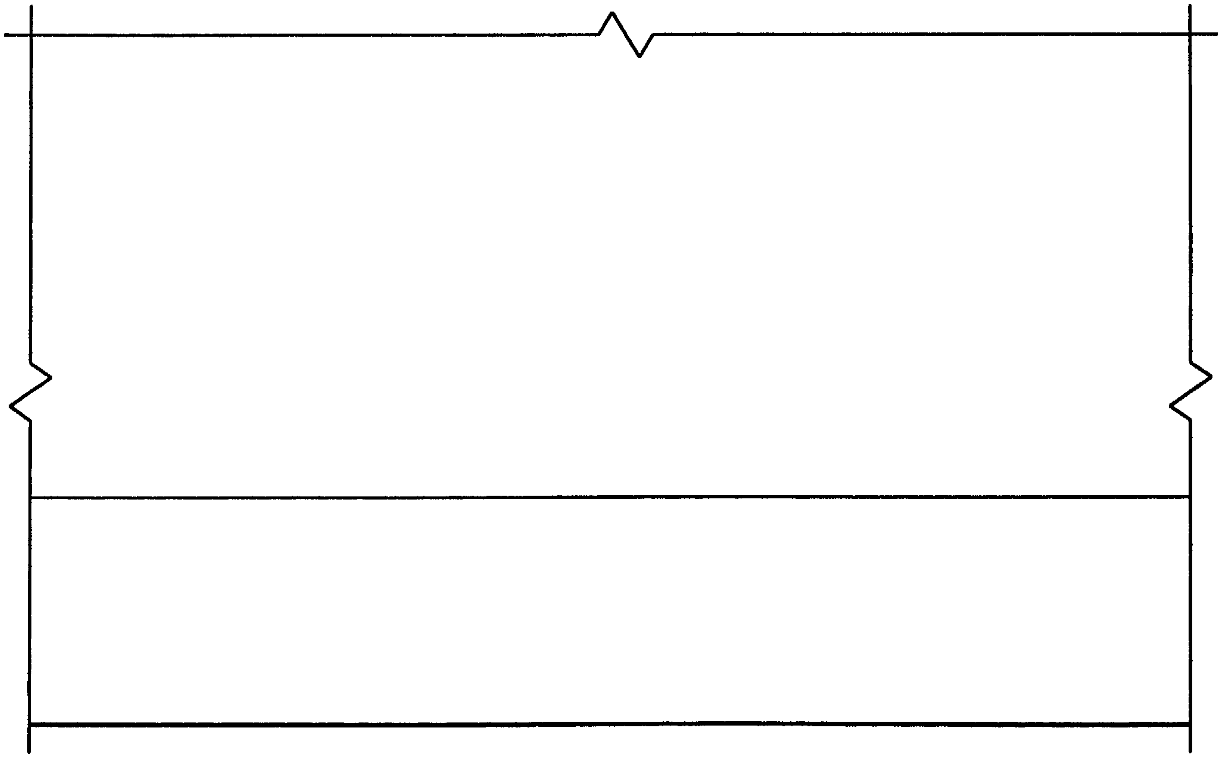


Fig 10.0102Cb

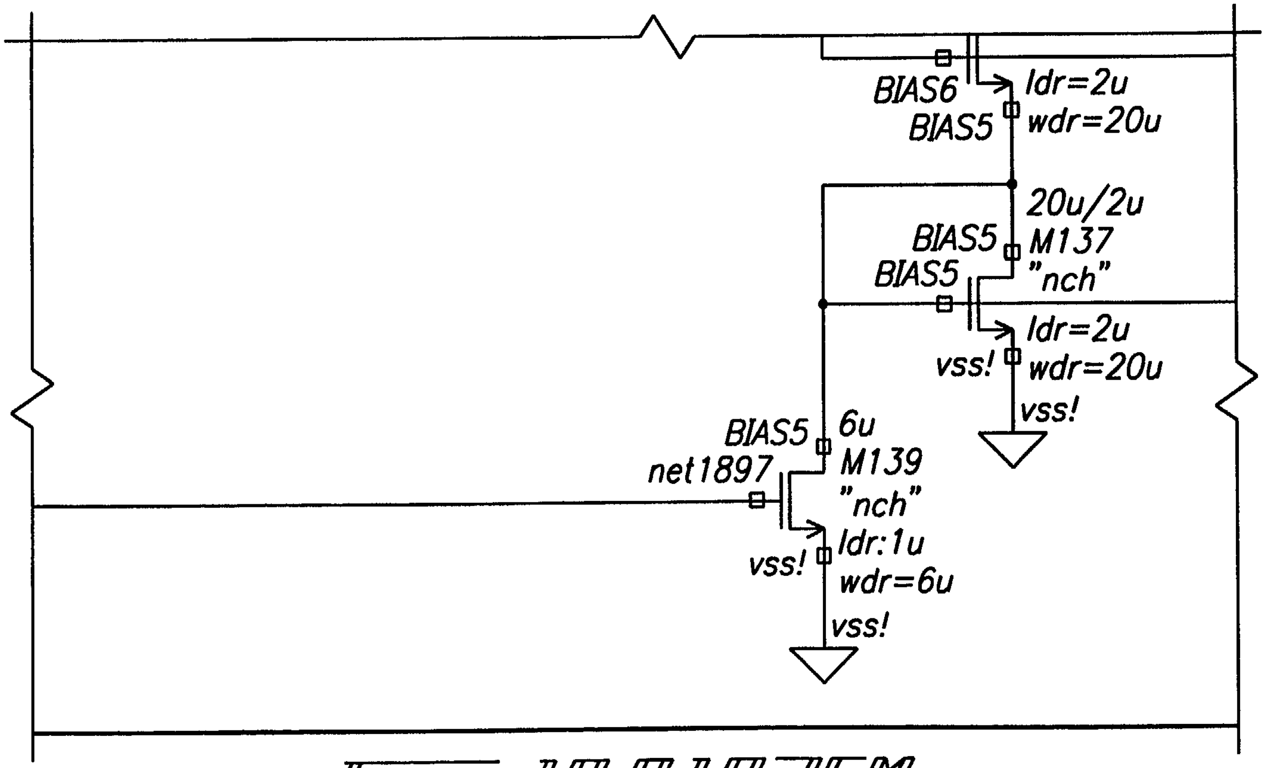


Fig 10.0102CM

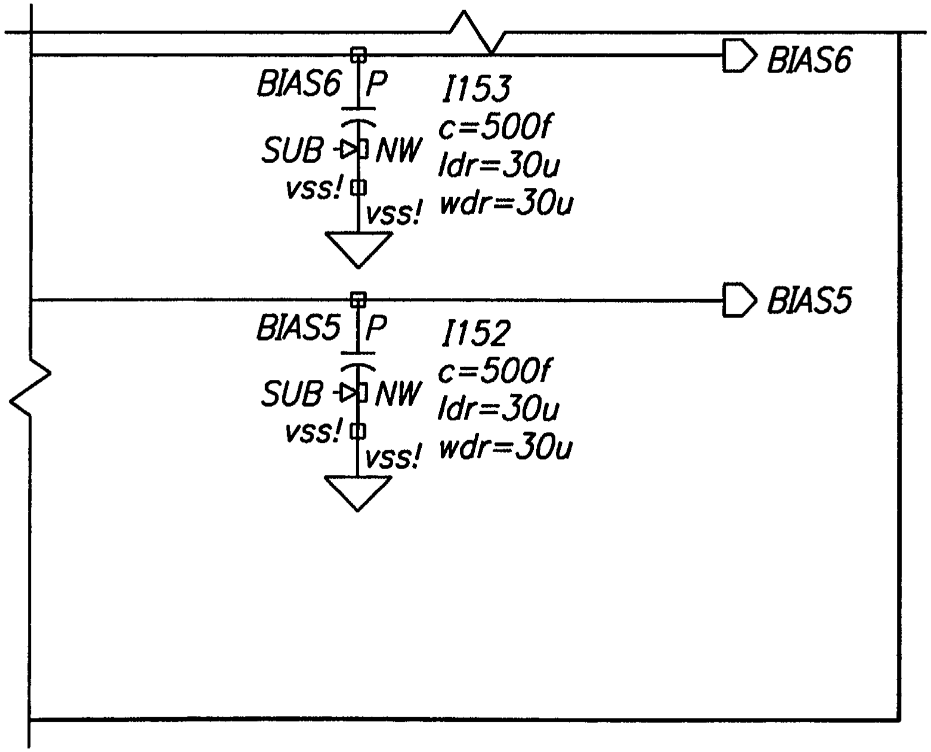
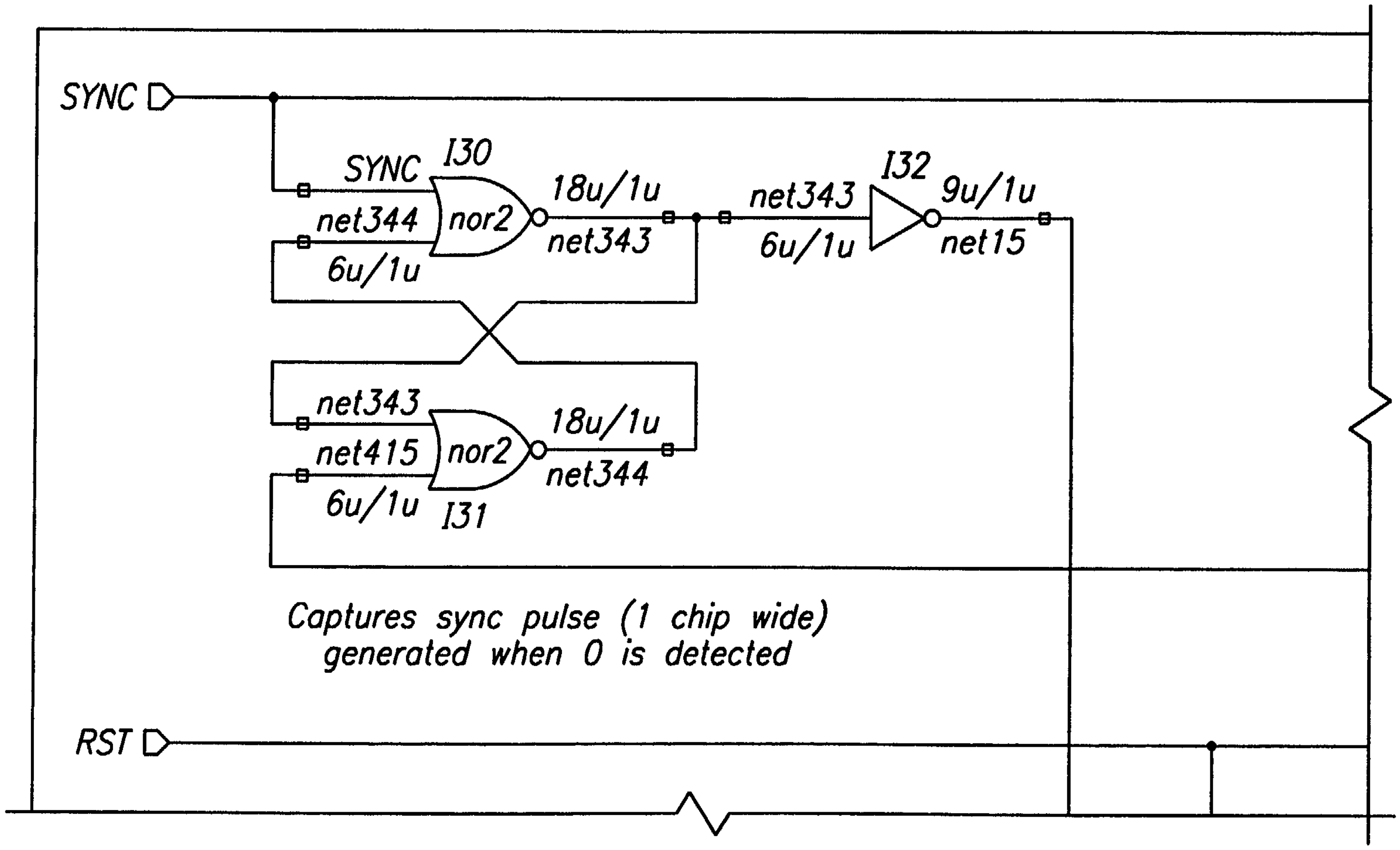


Fig 10.0102CN

10.02AA	*10.02AB*	*10.02AC*	*10.02AD*	*10.02AE*
10.02BA	*10.02BB*	*10.02BC*	*10.02BD*	*10.02BE*

Fig 10.02



Captures sync pulse (1 chip wide) generated when 0 is detected

Fig 10.02AA

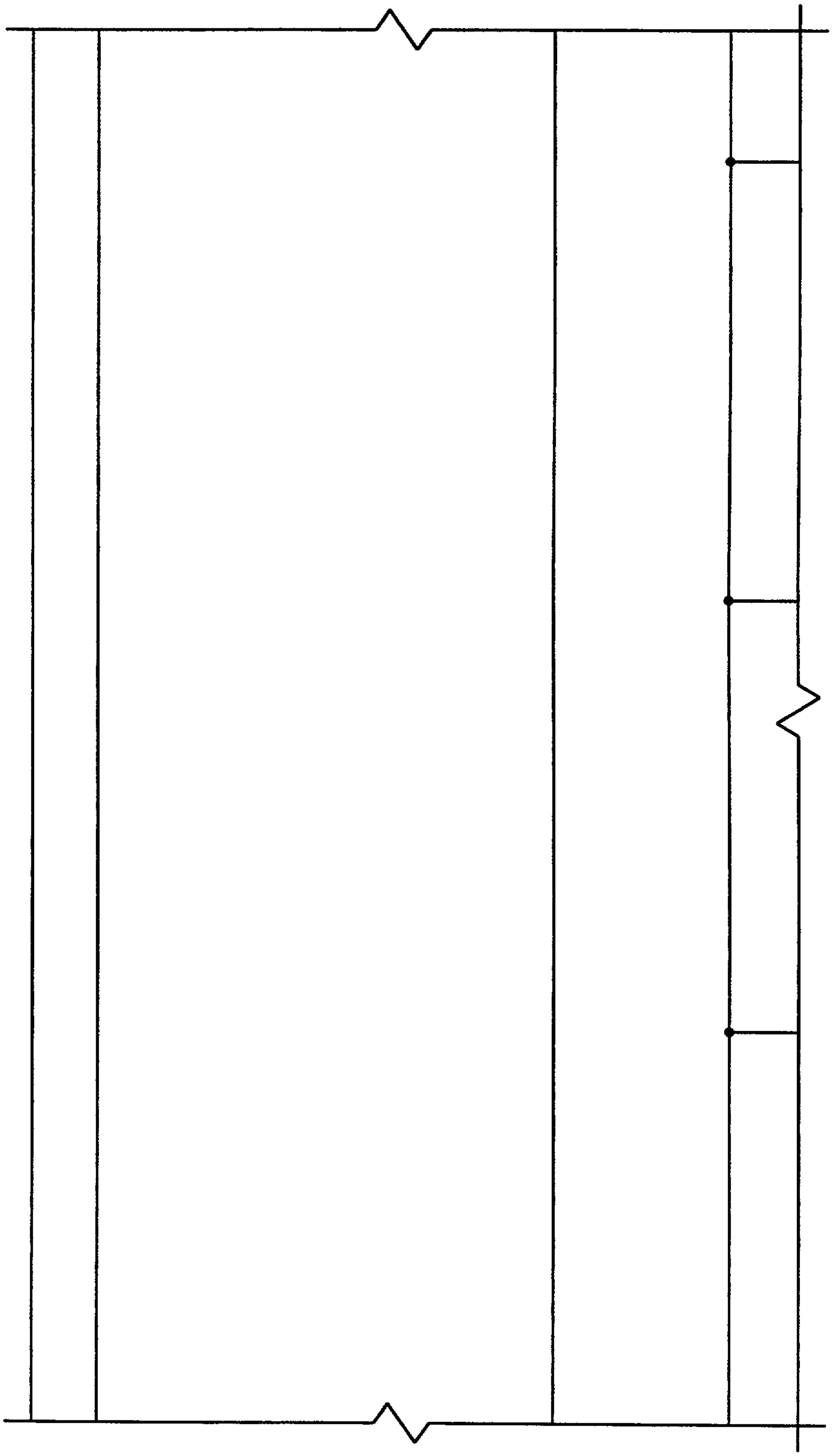


Fig 10.02AB

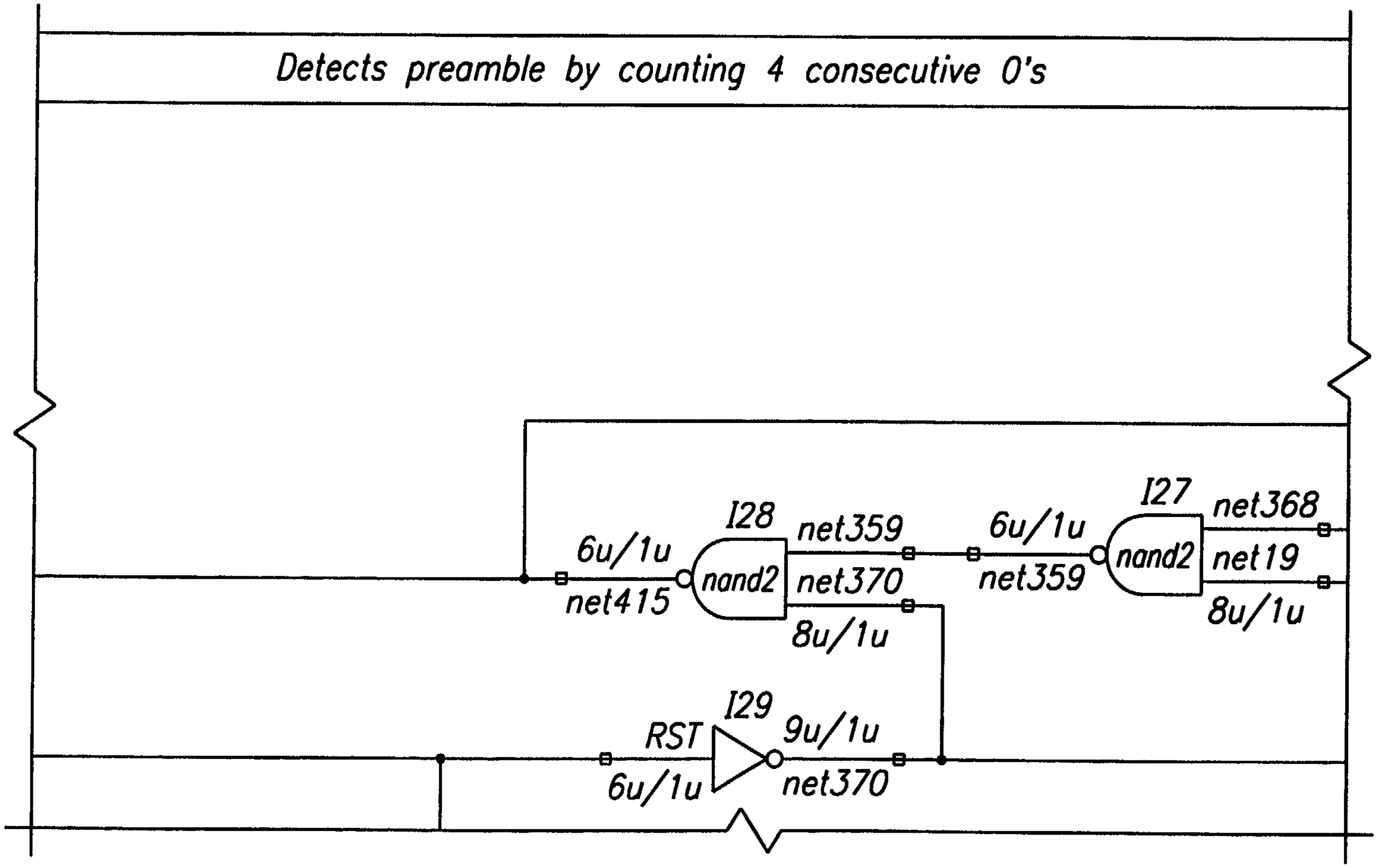

Detects preamble by counting 4 consecutive 0's
I27
nand2
net368
net19
8u/1u
6u/1u
net359
I28
nand2
net359
net370
8u/1u
6u/1u
net415
I29
RST
6u/1u
9u/1u
net370

Fig 10.02AC

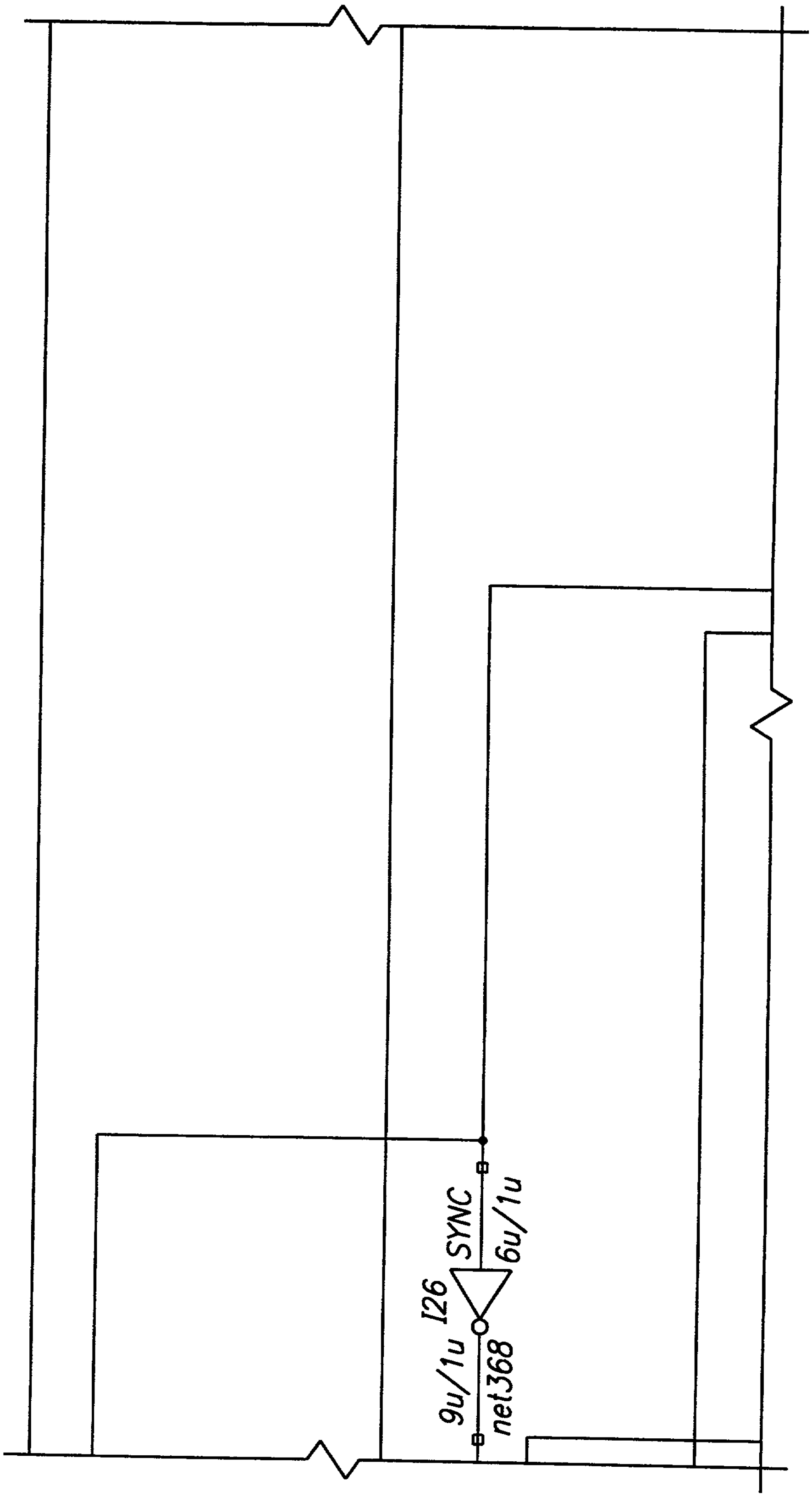


Fig 10.02AD

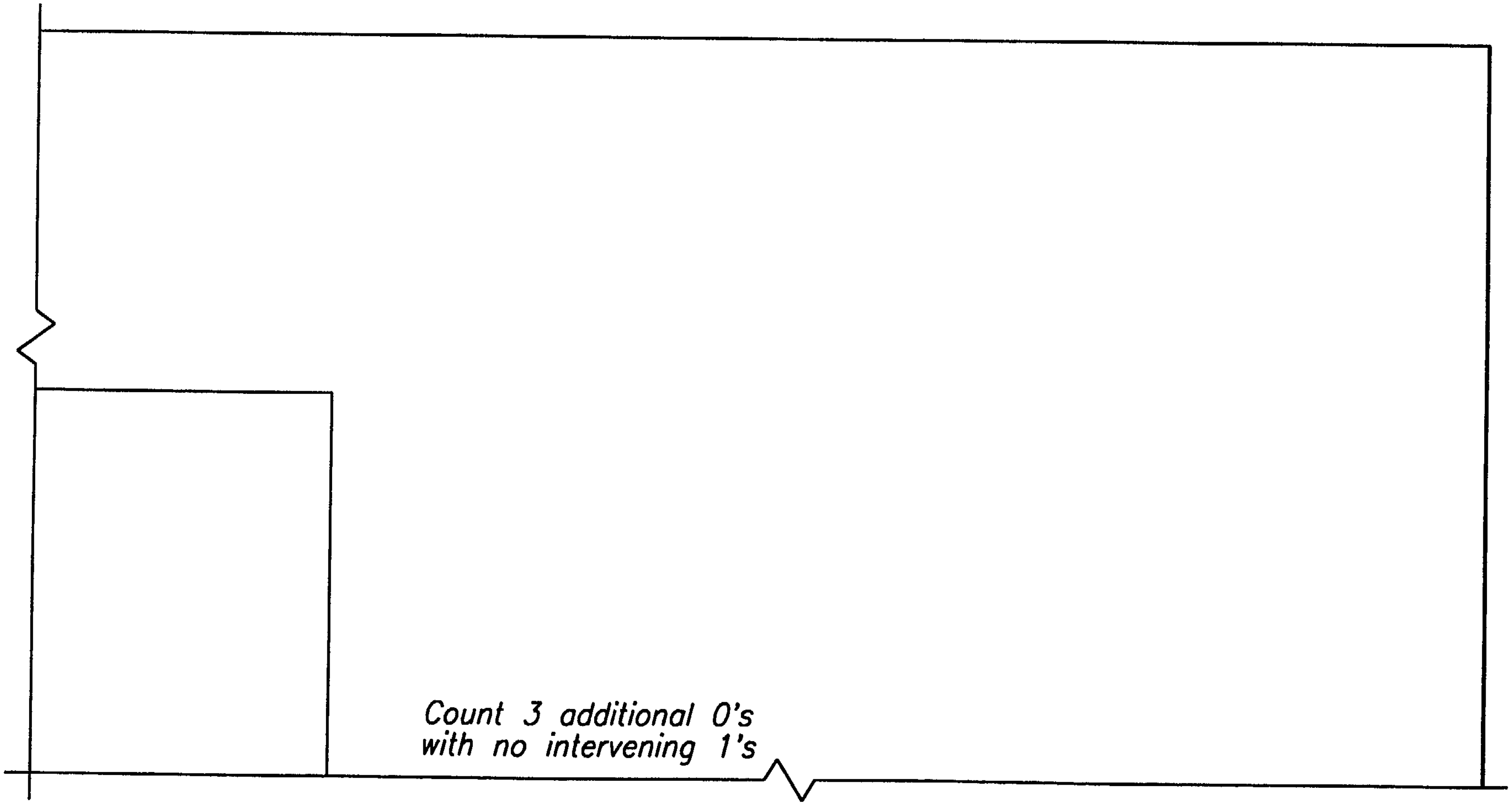


Fig 10.02AE

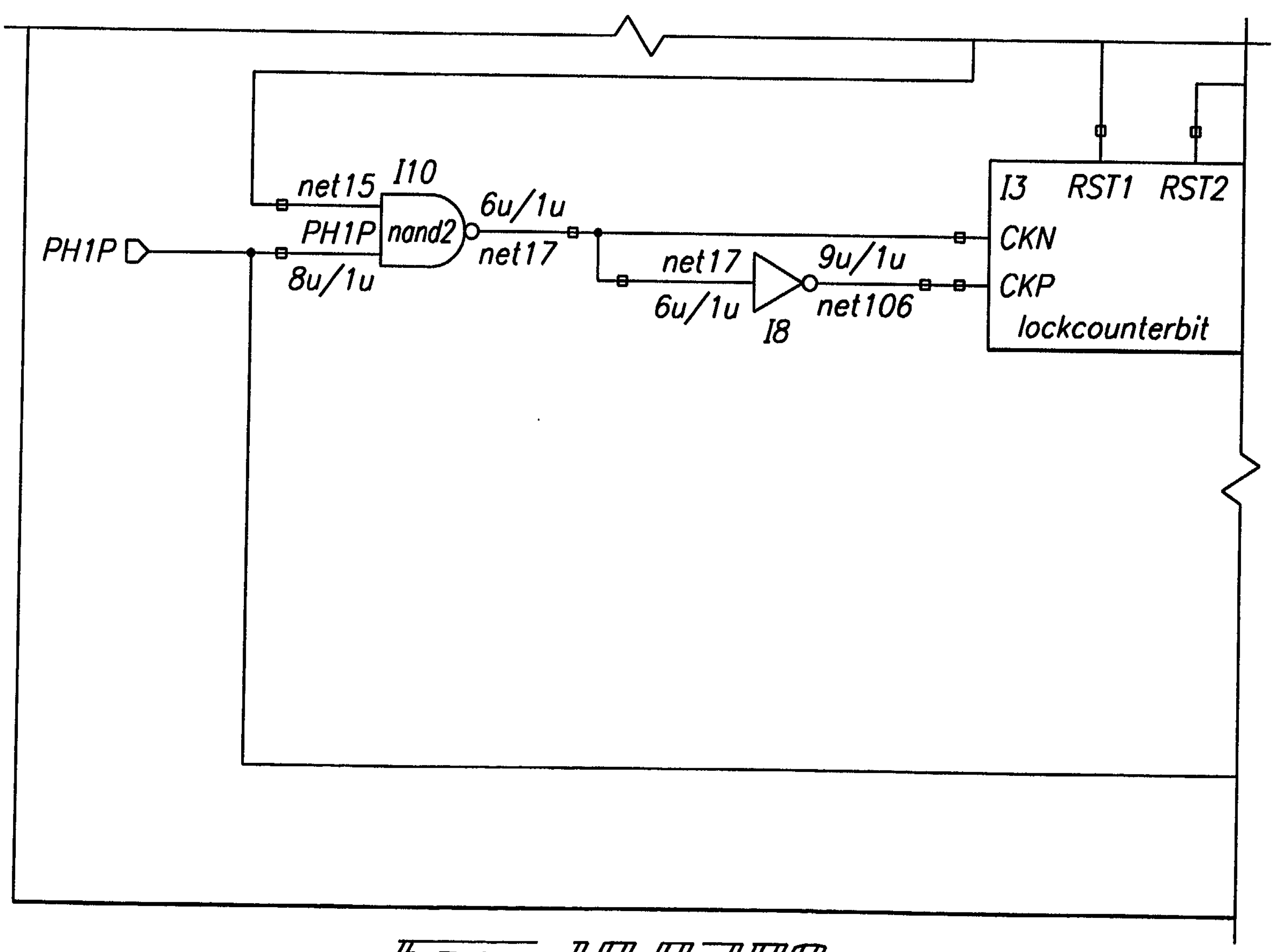

PH1P
net15
I10
PH1P
nand2
8u/1u
6u/1u
net17
net17
6u/1u
I8
9u/1u
net106
I3
RST1
RST2
CKN
CKP
lockcounterbit

Fig 10.02BA

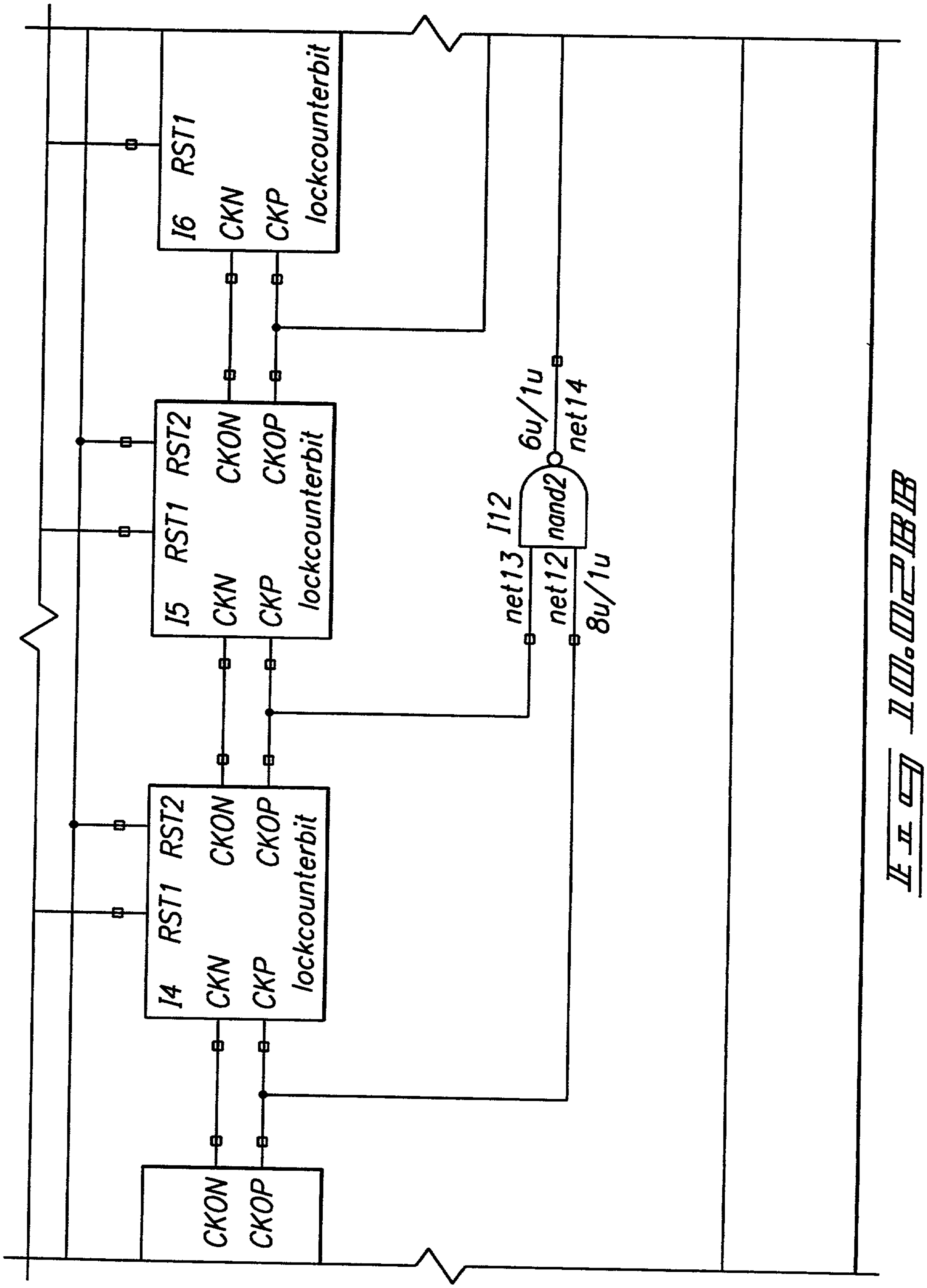

I6
RST1
CKN
CKP
lockcounterbit
I5
RST1
RST2
CKN
CKP
CKON
CKOP
lockcounterbit
I4
RST1
RST2
CKN
CKP
CKON
CKOP
lockcounterbit
CKON
CKOP
I12
nand2
net13
net12
net14
6u/1u
8u/1u

Fig 10.02BB

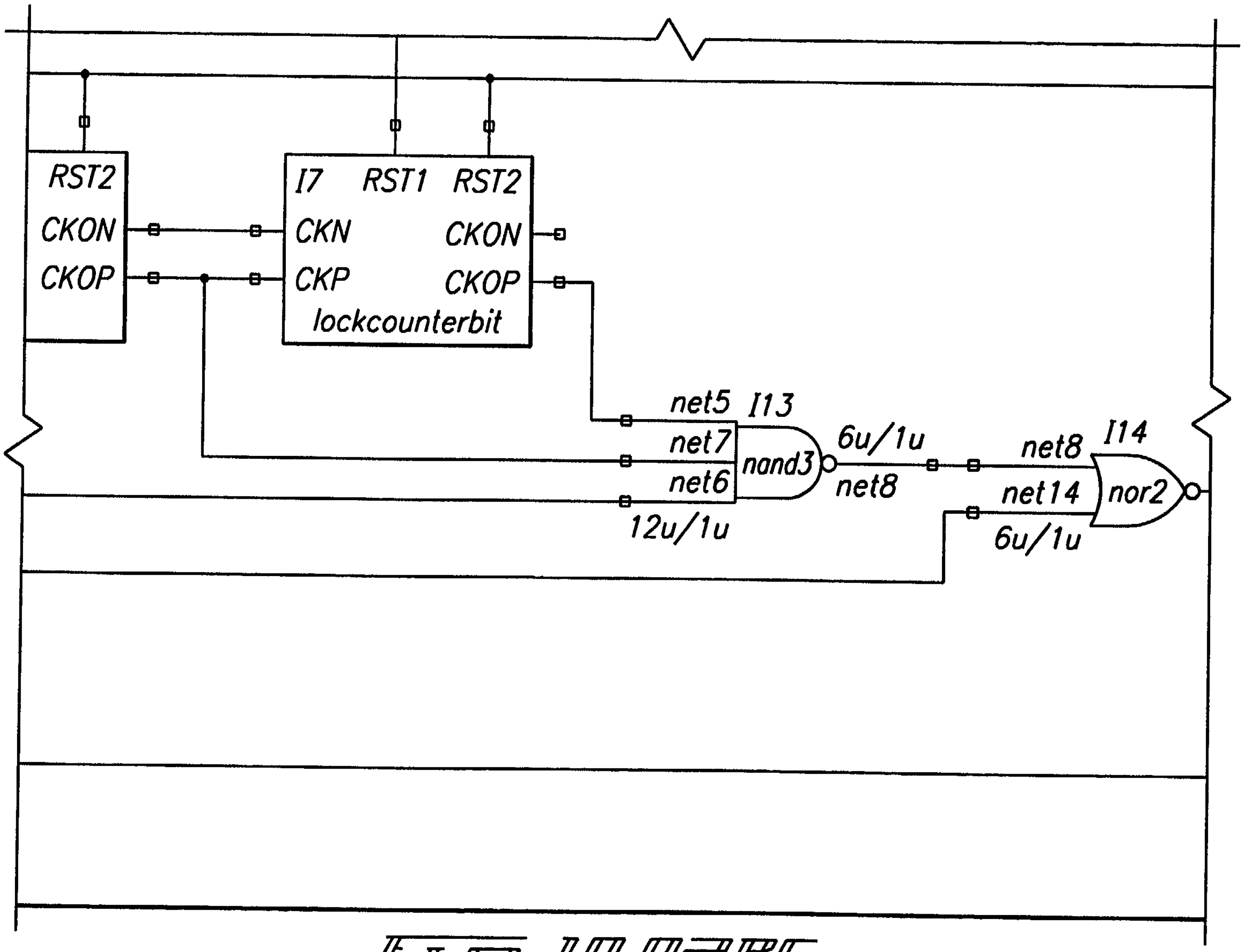

RST2
CKON
CKOP
I7
RST1
RST2
CKN
CKON
CKP
CKOP
lockcounterbit
net5
I13
net7
nand3
net6
12u/1u
6u/1u
net8
net8
I14
net14
nor2
6u/1u

Fig 10.02BC

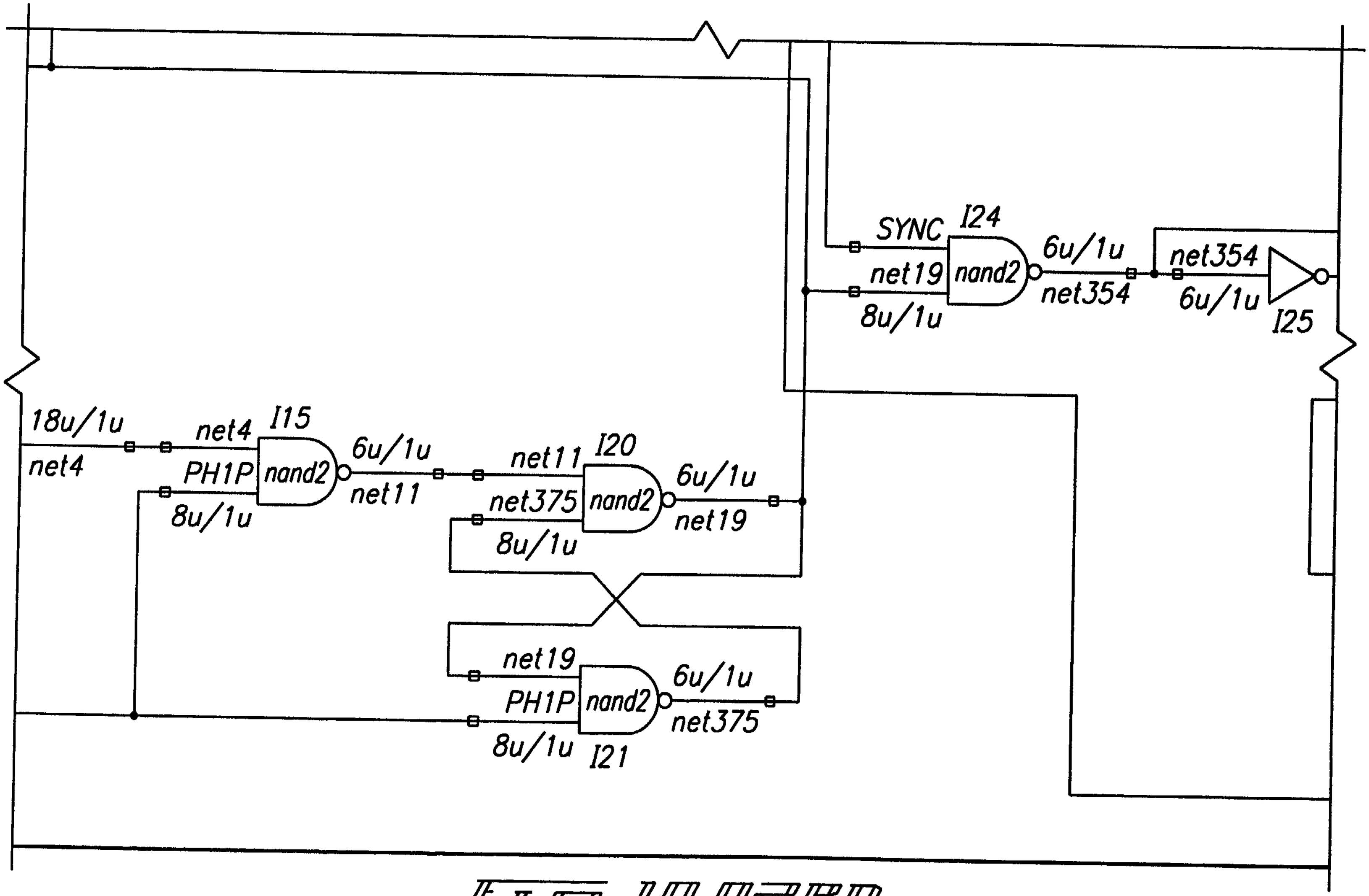

18u/1u
net4
net4
PH1P
8u/1u
I15
nand2
6u/1u
net11
net11
net375
8u/1u
I20
nand2
6u/1u
net19
net19
PH1P
8u/1u
I21
nand2
6u/1u
net375
SYNC
net19
8u/1u
I24
nand2
6u/1u
net354
net354
6u/1u
I25

Fig 10.02BD

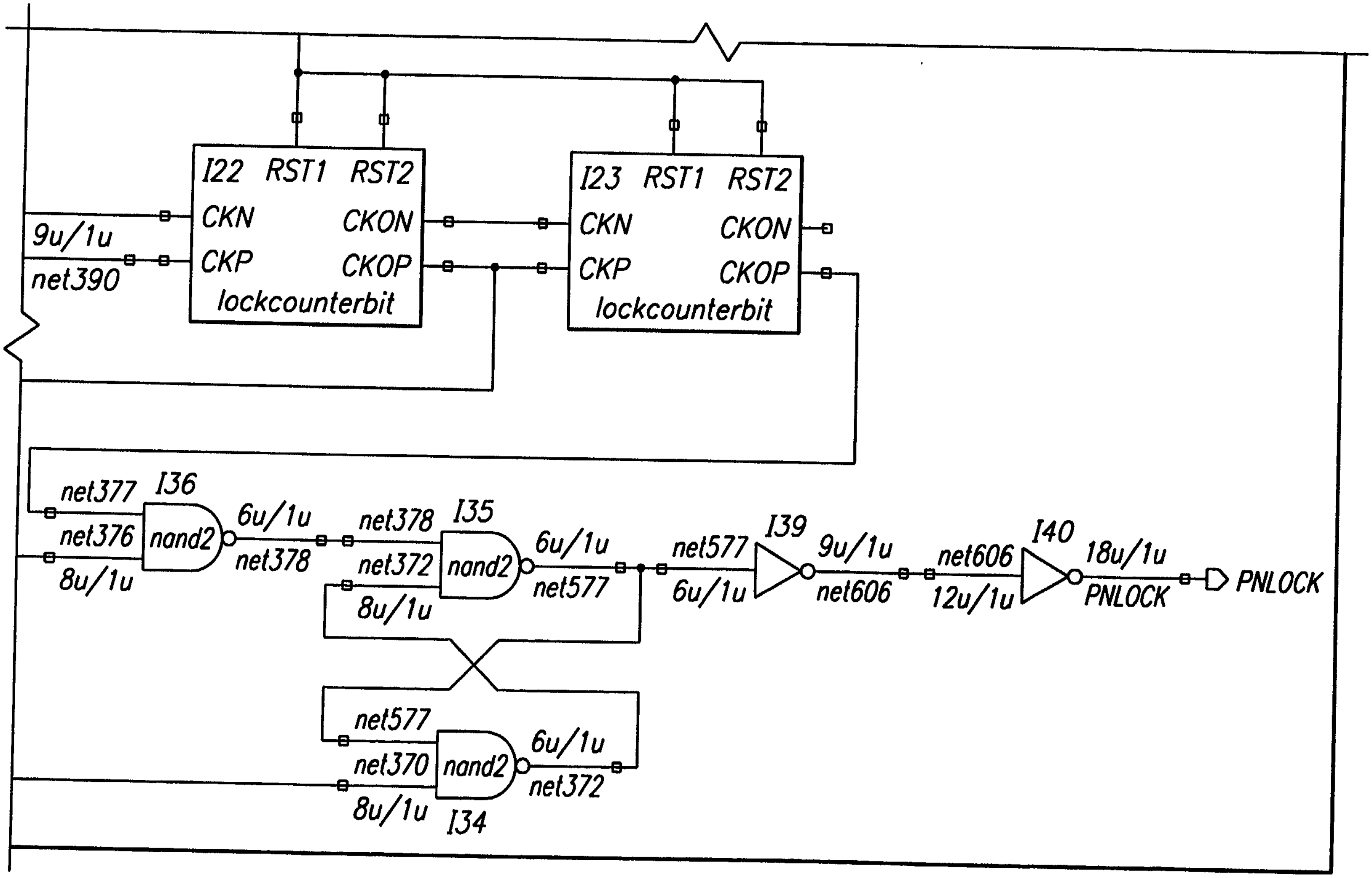

I22
RST1
RST2
CKN
CKON
CKP
CKOP
lockcounterbit
9u/1u
net390
I23
RST1
RST2
CKN
CKON
CKP
CKOP
lockcounterbit
net377
I36
net376
nand2
8u/1u
6u/1u
net378
net378
I35
net372
nand2
8u/1u
6u/1u
net577
net577
nand2
net370
8u/1u
I34
6u/1u
net372
net577
I39
6u/1u
9u/1u
net606
net606
12u/1u
I40
18u/1u
PNLOCK
PNLOCK

Fig 10.02BE

09822063.061101

2908/3273

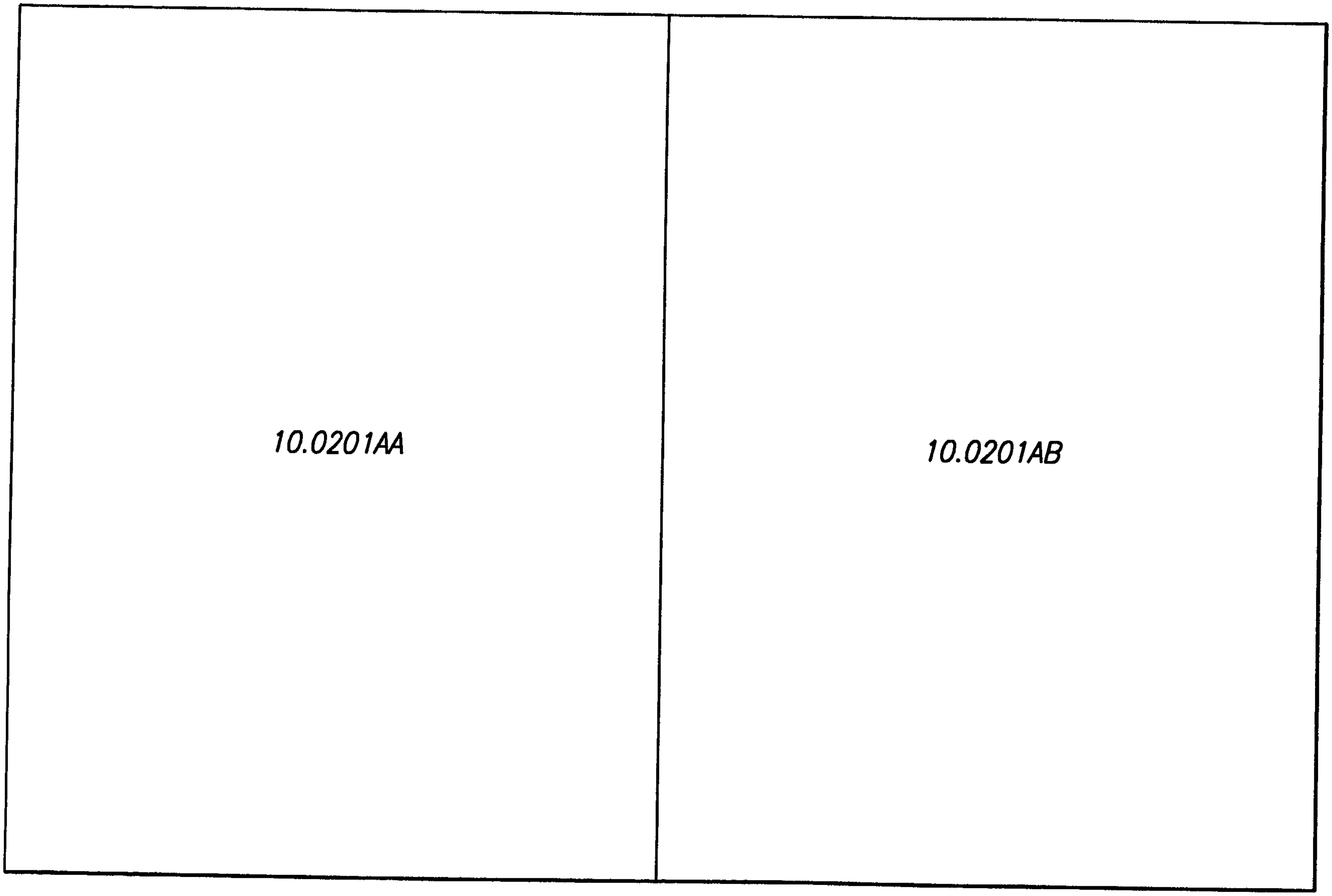


Fig 10.0201

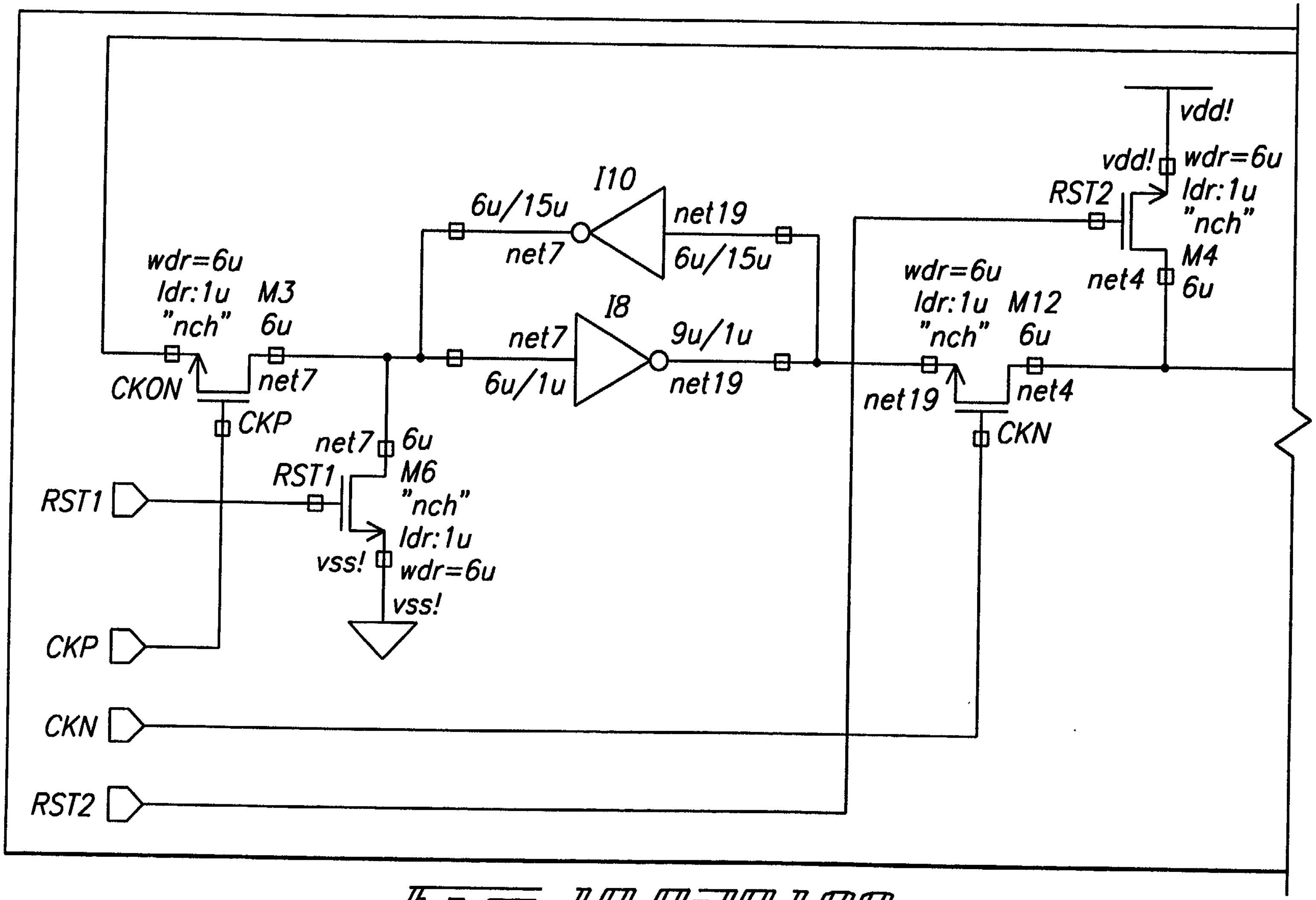


Fig 10.0201AA

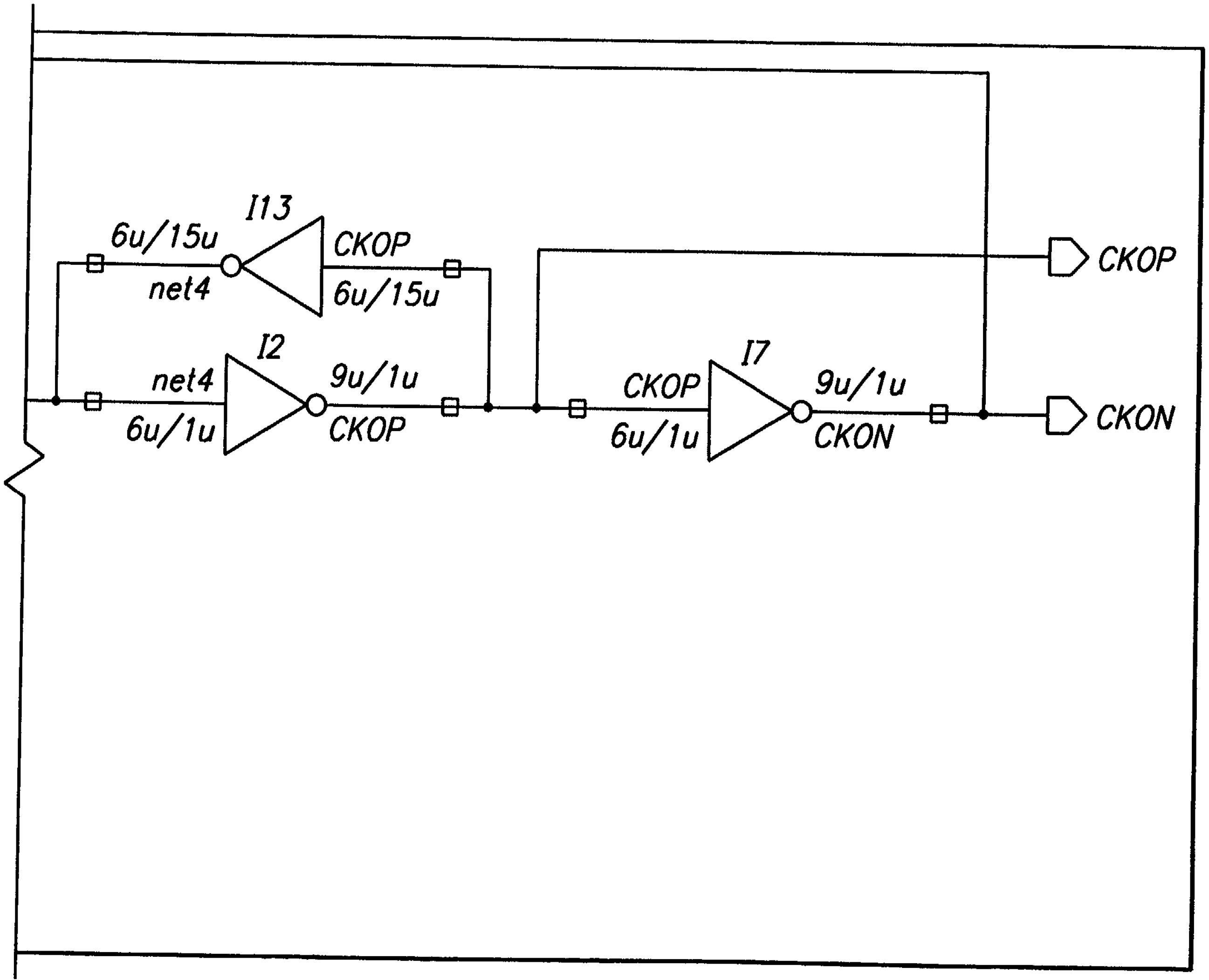


Fig 10.0201AB

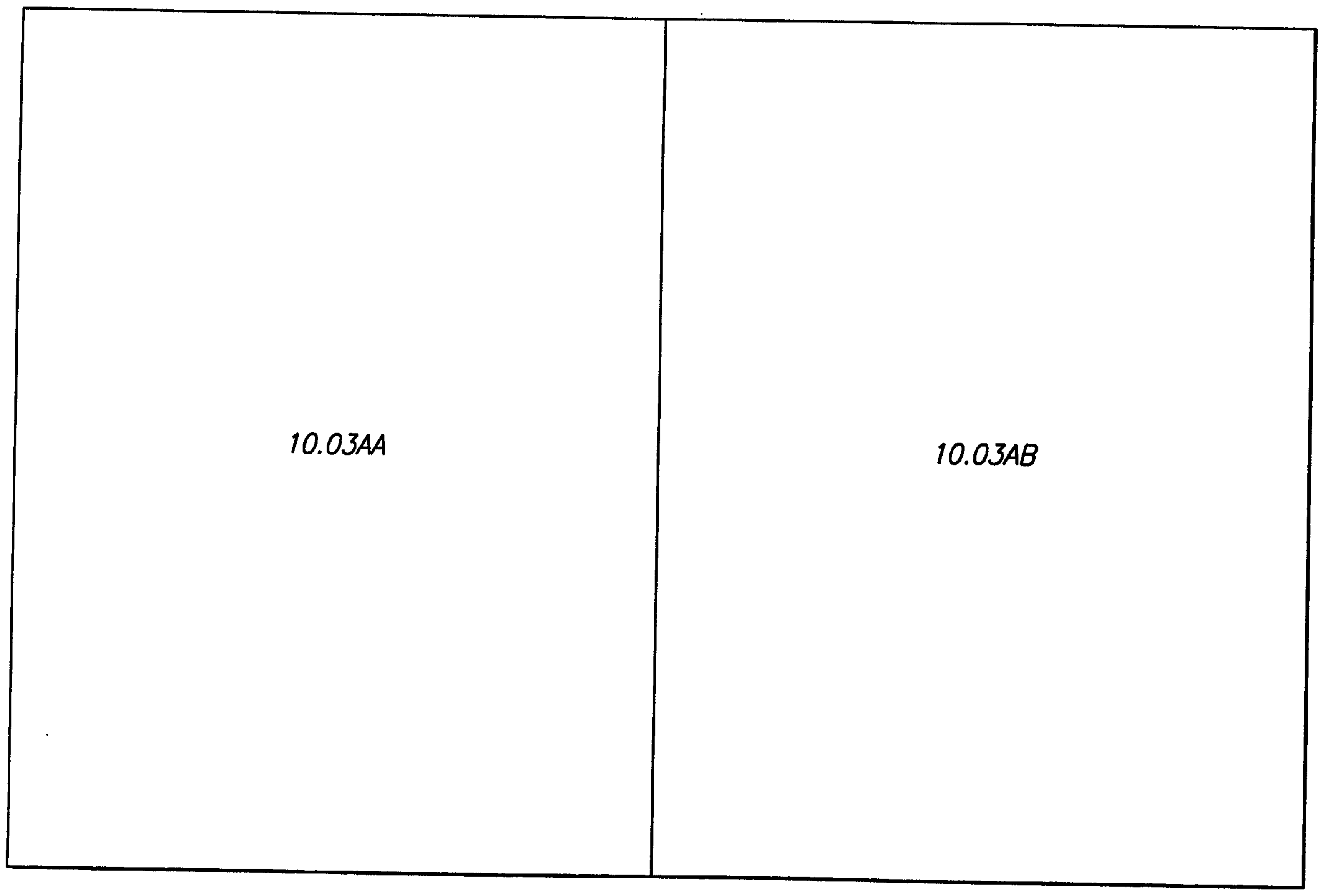
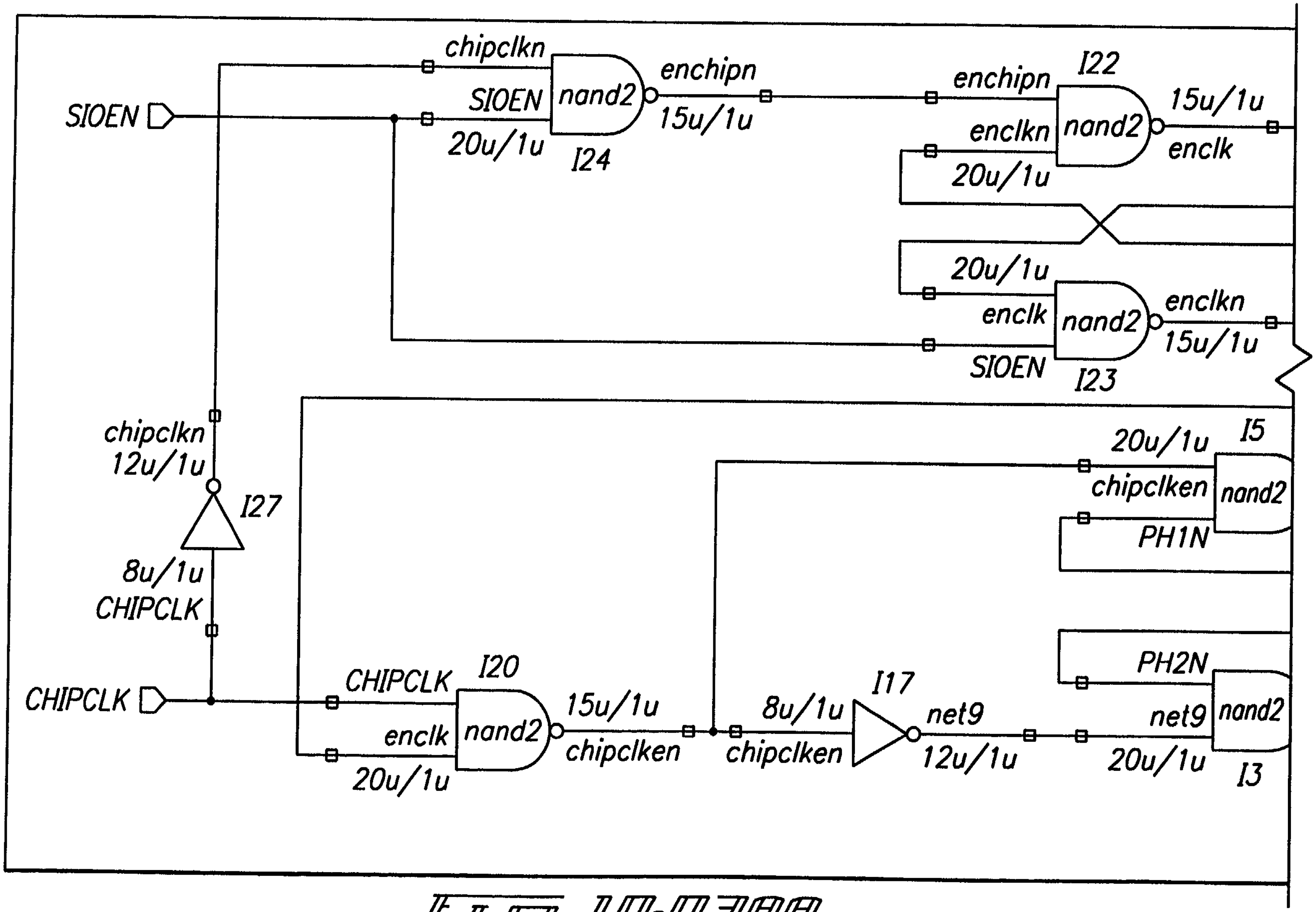


Fig 10.03



chipclkn
SIOEN
SIOEN
20u/1u
nand2
I24
enchipn
15u/1u
enchipn
I22
enclkn
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nand2
15u/1u
enclk
20u/1u
enclk
SIOEN
nand2
I23
enclkn
15u/1u
chipclkn
12u/1u
I27
8u/1u
CHIPCLK
CHIPCLK
CHIPCLK
I20
enclk
20u/1u
nand2
15u/1u
chipclken
chipclken
8u/1u
I17
net9
12u/1u
20u/1u
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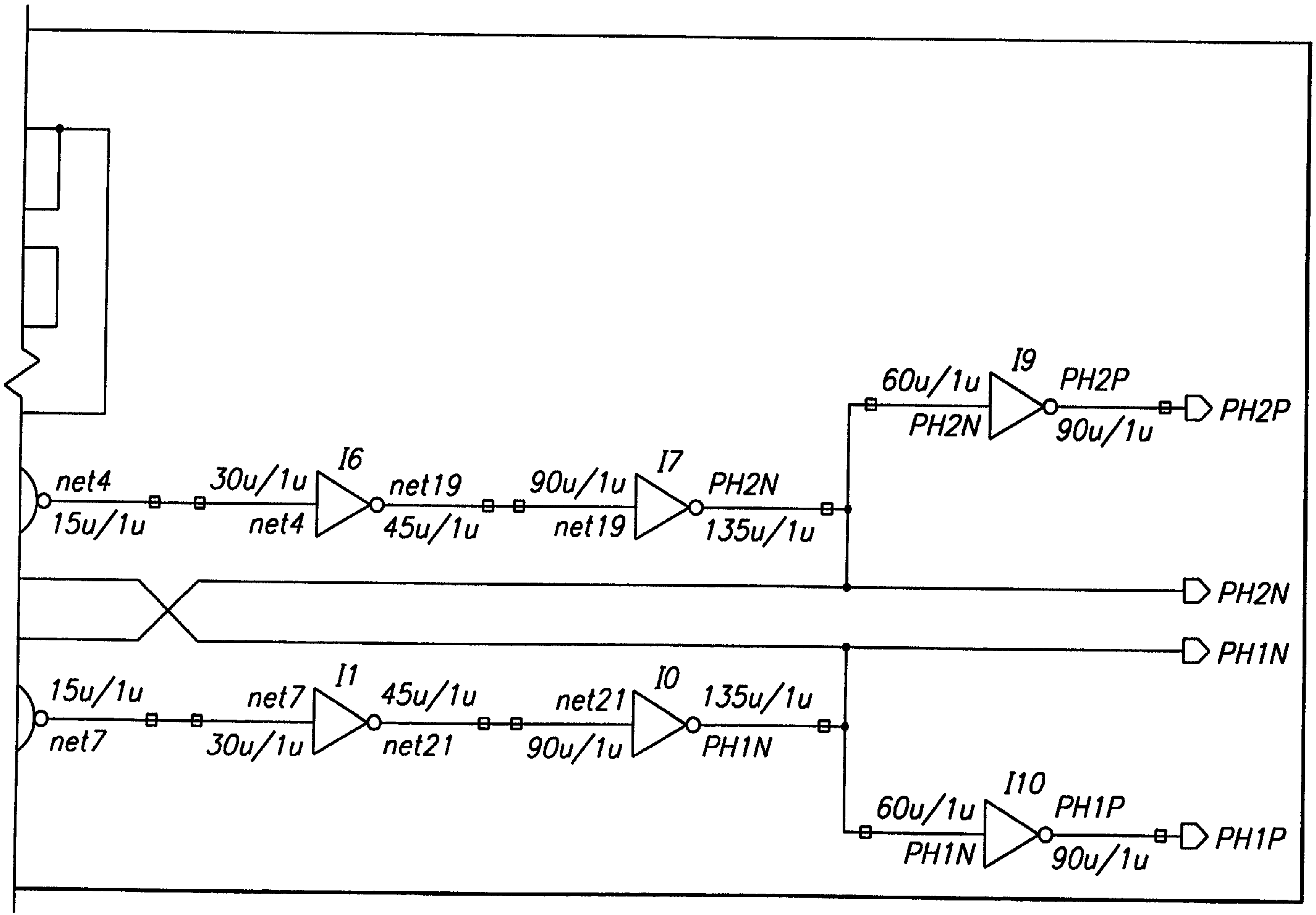
chipclken
nand2
PH1N
PH2N
net9
nand2
20u/1u
I3

Fig 10.03AA


net4
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30u/1u
net4
I6
net19
45u/1u
90u/1u
net19
I7
PH2N
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60u/1u
PH2N
I9
PH2P
90u/1u
PH2P
PH2N
PH1N
15u/1u
net7
net7
30u/1u
I1
45u/1u
net21
net21
90u/1u
I0
135u/1u
PH1N
60u/1u
PH1N
I10
PH1P
90u/1u
PH1P

Fig 10.03AB

10.04AA	10.04AB	10.04AC	10.04AD	10.04AE
10.04BA	10.04BB	10.04BC	10.04BD	10.04BE
10.04CA	10.04CB	10.04CC	10.04CD	10.04CE

Fig 10.04

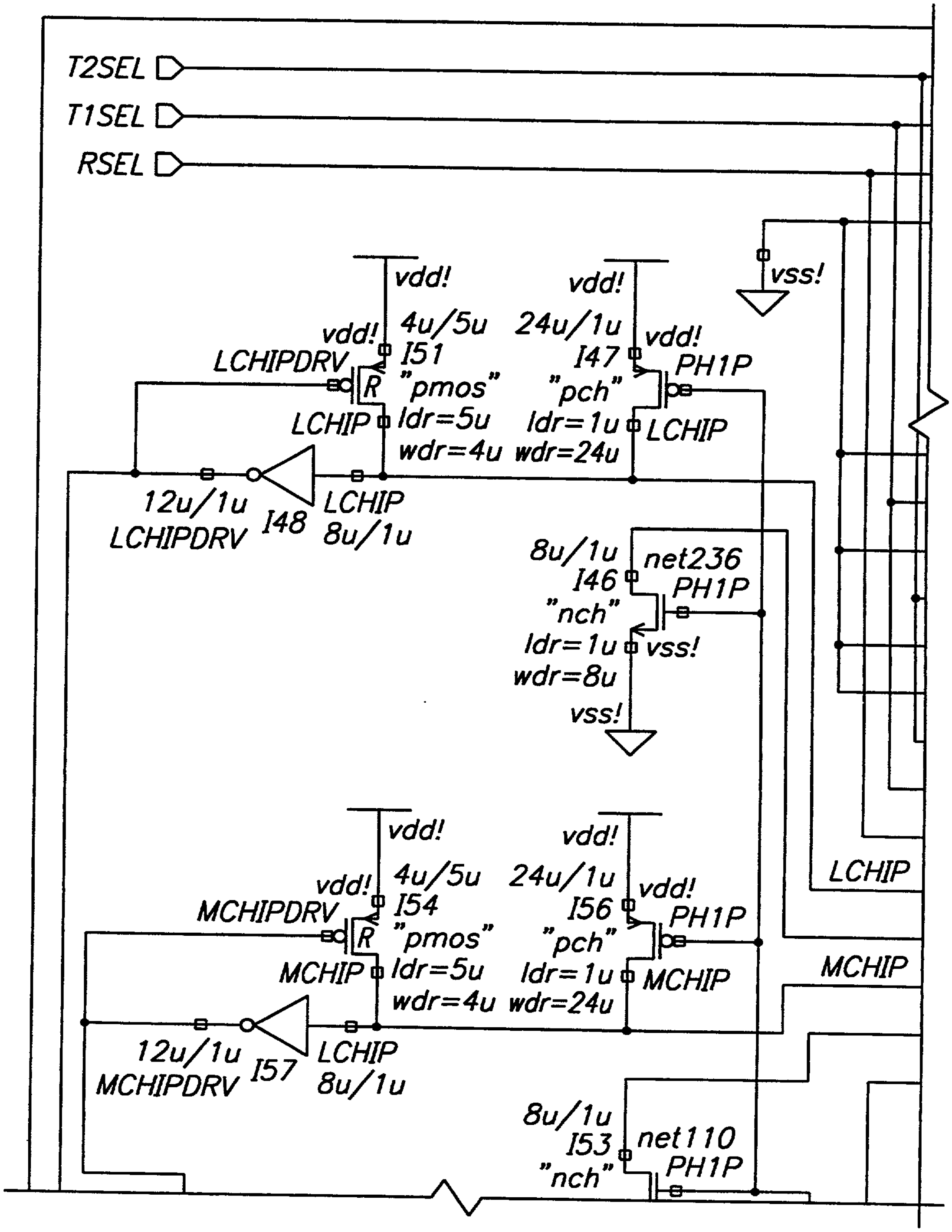

T2SEL
T1SEL
RSEL
vdd!
vdd!
vss!
vdd!
4u/5u
24u/1u
vdd!
LCHIPDRV
I51
I47
PH1P
"pmos"
"pch"
R
LCHIP
ldr=5u
ldr=1u
LCHIP
wdr=4u
wdr=24u
12u/1u
LCHIP
LCHIPDRV
I48
8u/1u
8u/1u
net236
I46
PH1P
"nch"
ldr=1u
vss!
wdr=8u
vss!
vdd!
vdd!
4u/5u
24u/1u
vdd!
LCHIP
vdd!
MCHIPDRV
I54
I56
PH1P
"pmos"
"pch"
R
MCHIP
ldr=5u
ldr=1u
MCHIP
MCHIP
wdr=4u
wdr=24u
12u/1u
LCHIP
MCHIPDRV
I57
8u/1u
8u/1u
I53
net110
PH1P
"nch"

Fig 10.04AA

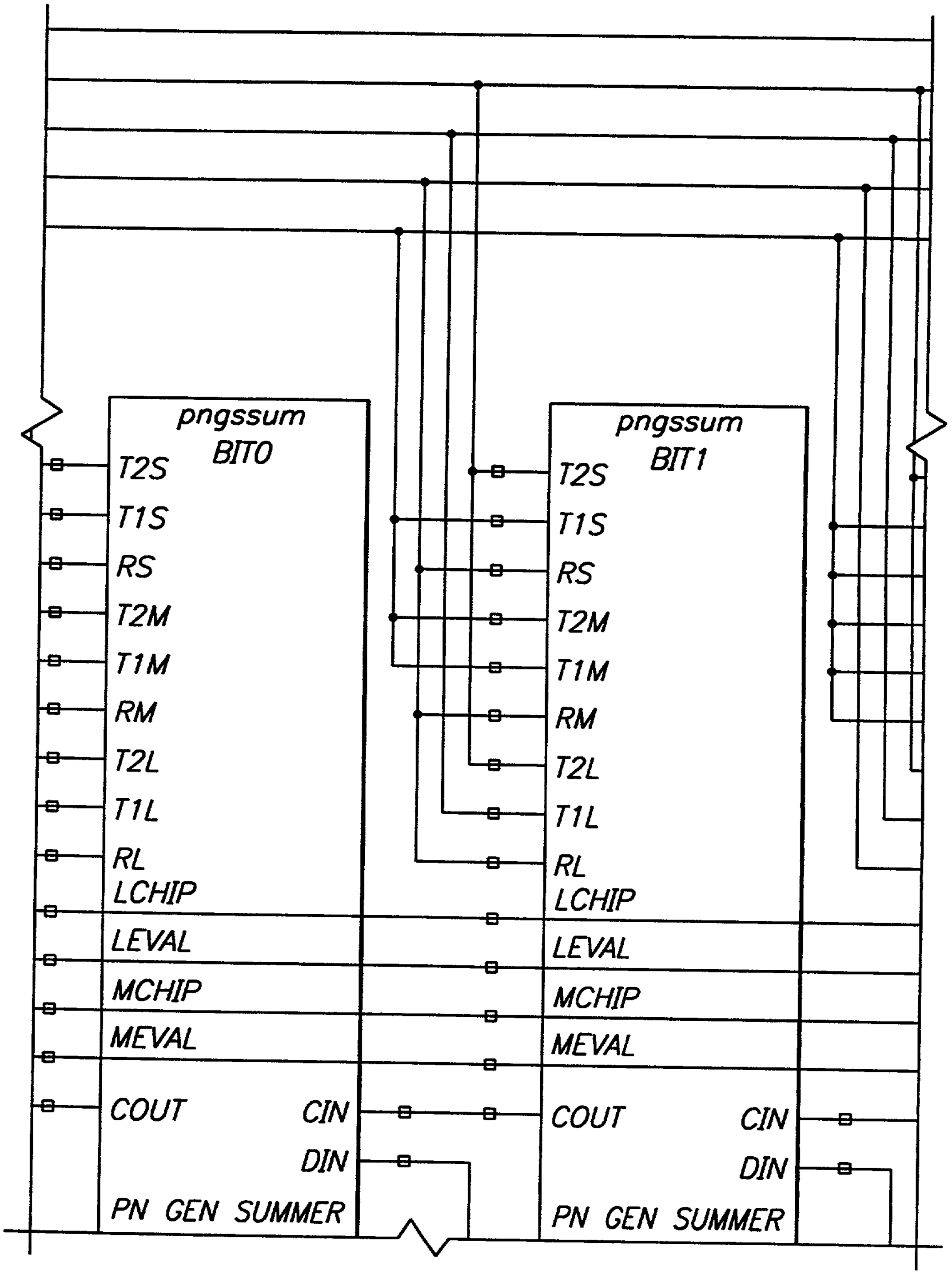

pngssum
BIT0
T2S
T1S
RS
T2M
T1M
RM
T2L
T1L
RL
LCHIP
LEVAL
MCHIP
MEVAL
COUT
CIN
DIN
PN GEN SUMMER
pngssum
BIT1
T2S
T1S
RS
T2M
T1M
RM
T2L
T1L
RL
LCHIP
LEVAL
MCHIP
MEVAL
COUT
CIN
DIN
PN GEN SUMMER

Fig 10.04AB

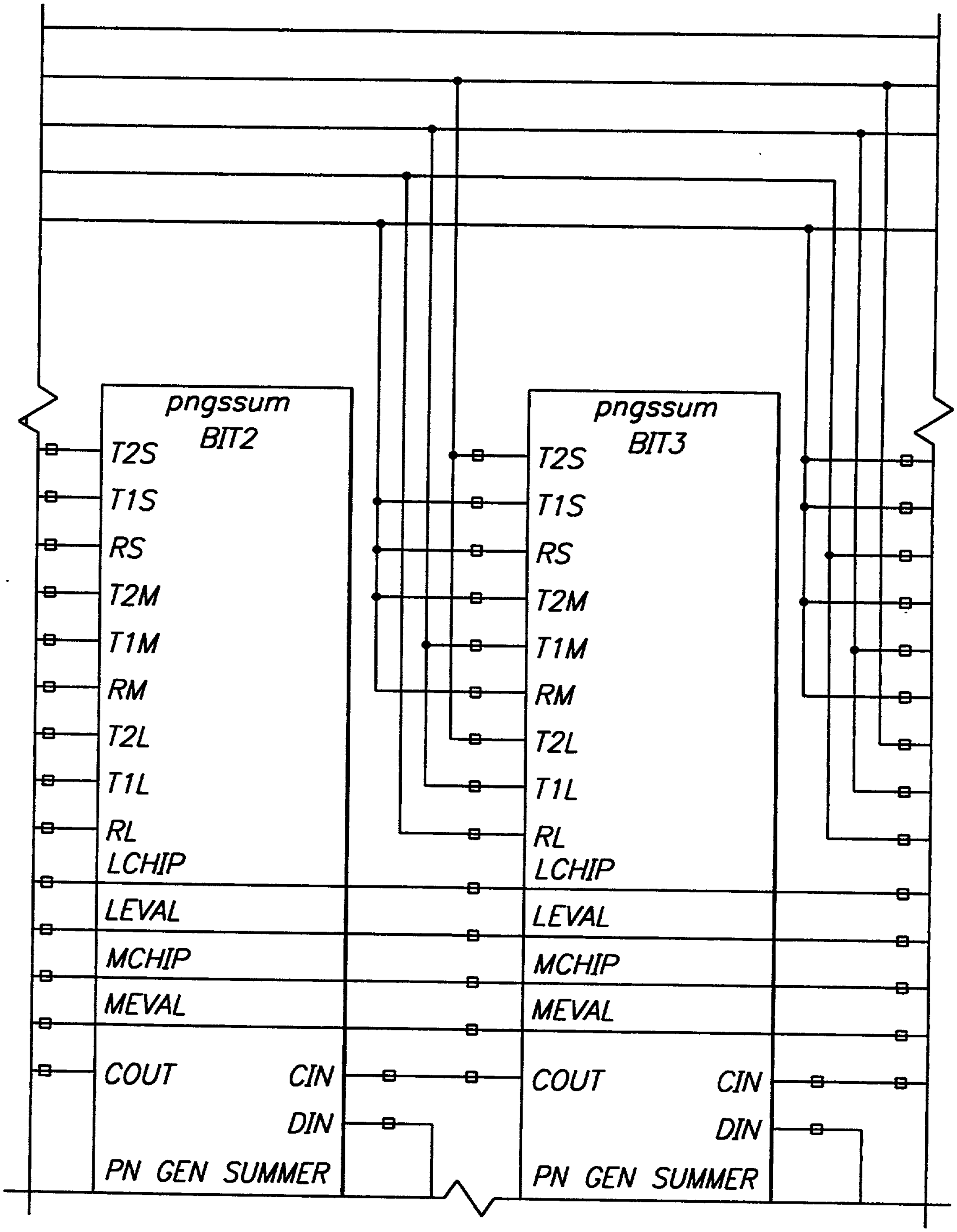

pngssum
BIT2
T2S
T1S
RS
T2M
T1M
RM
T2L
T1L
RL
LCHIP
LEVAL
MCHIP
MEVAL
COUT
CIN
DIN
PN GEN SUMMER
pngssum
BIT3
T2S
T1S
RS
T2M
T1M
RM
T2L
T1L
RL
LCHIP
LEVAL
MCHIP
MEVAL
COUT
CIN
DIN
PN GEN SUMMER

Fig 10.04AC

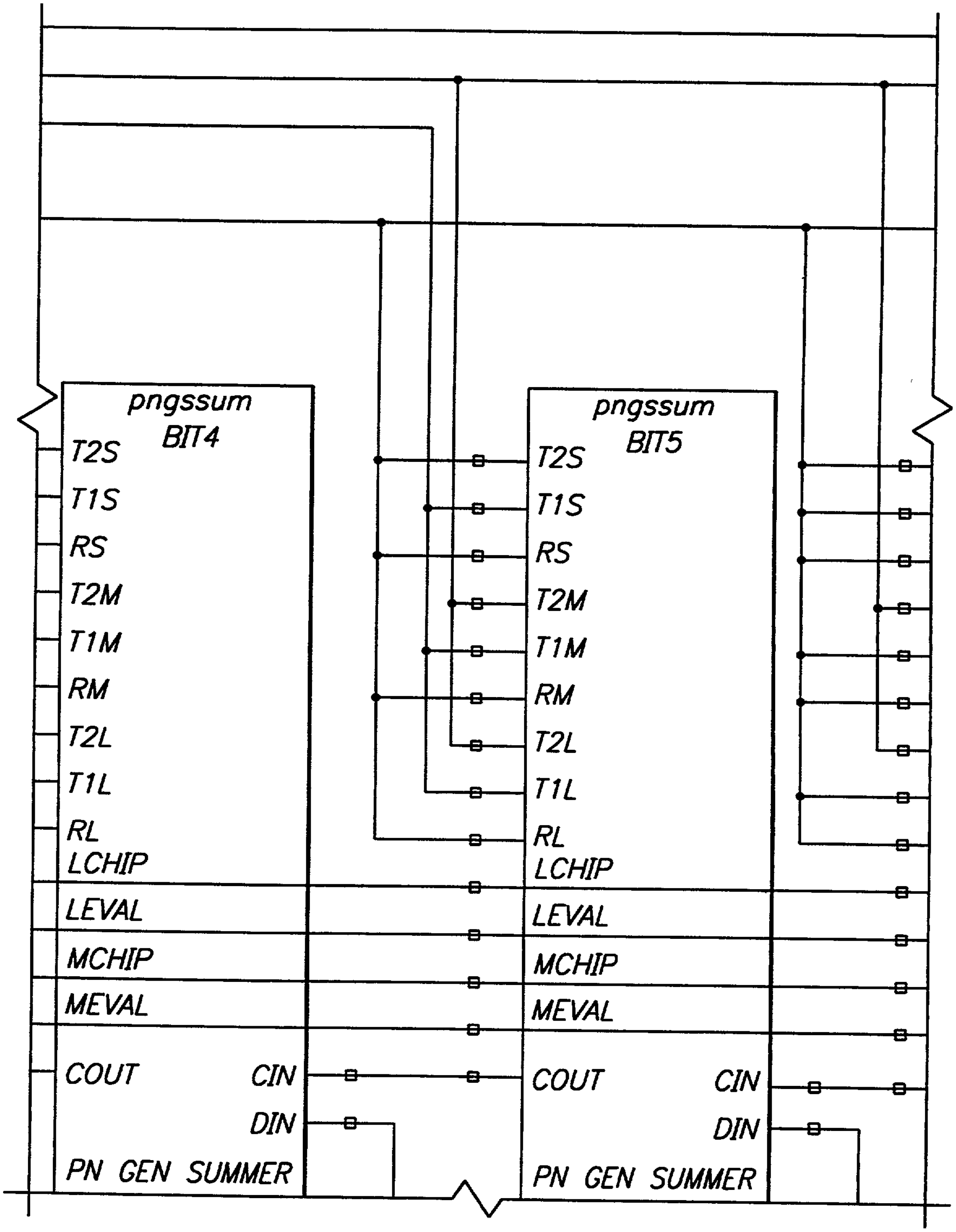

pngssum
BIT4
T2S
T1S
RS
T2M
T1M
RM
T2L
T1L
RL
LCHIP
LEVAL
MCHIP
MEVAL
COUT
CIN
DIN
PN GEN SUMMER
pngssum
BIT5
T2S
T1S
RS
T2M
T1M
RM
T2L
T1L
RL
LCHIP
LEVAL
MCHIP
MEVAL
COUT
CIN
DIN
PN GEN SUMMER

Fig 10.04AD

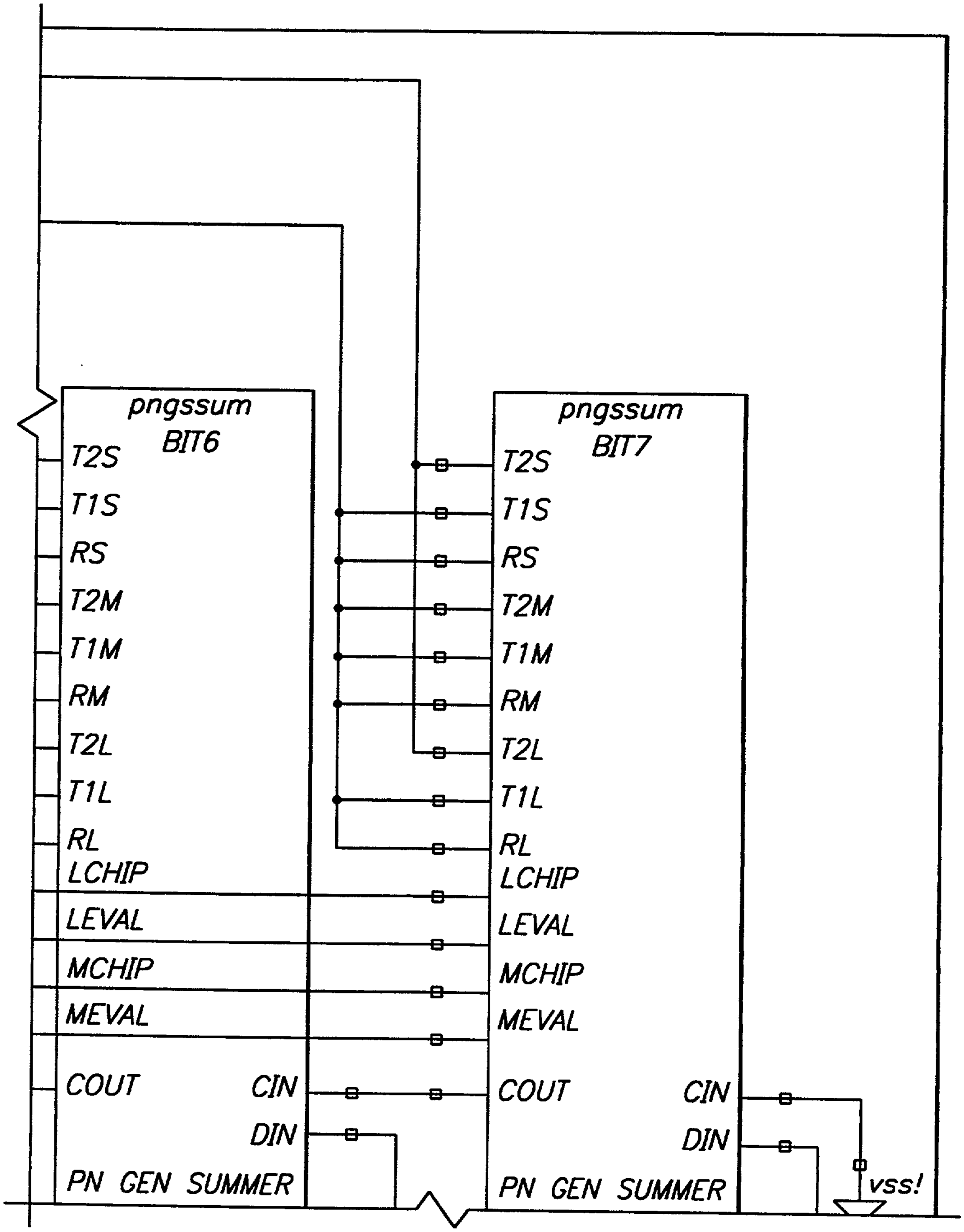

pngssum
BIT6
T2S
T1S
RS
T2M
T1M
RM
T2L
T1L
RL
LCHIP
LEVAL
MCHIP
MEVAL
COUT
CIN
DIN
PN GEN SUMMER
pngssum
BIT7
T2S
T1S
RS
T2M
T1M
RM
T2L
T1L
RL
LCHIP
LEVAL
MCHIP
MEVAL
COUT
CIN
DIN
PN GEN SUMMER
vss!

Fig 10.04AE

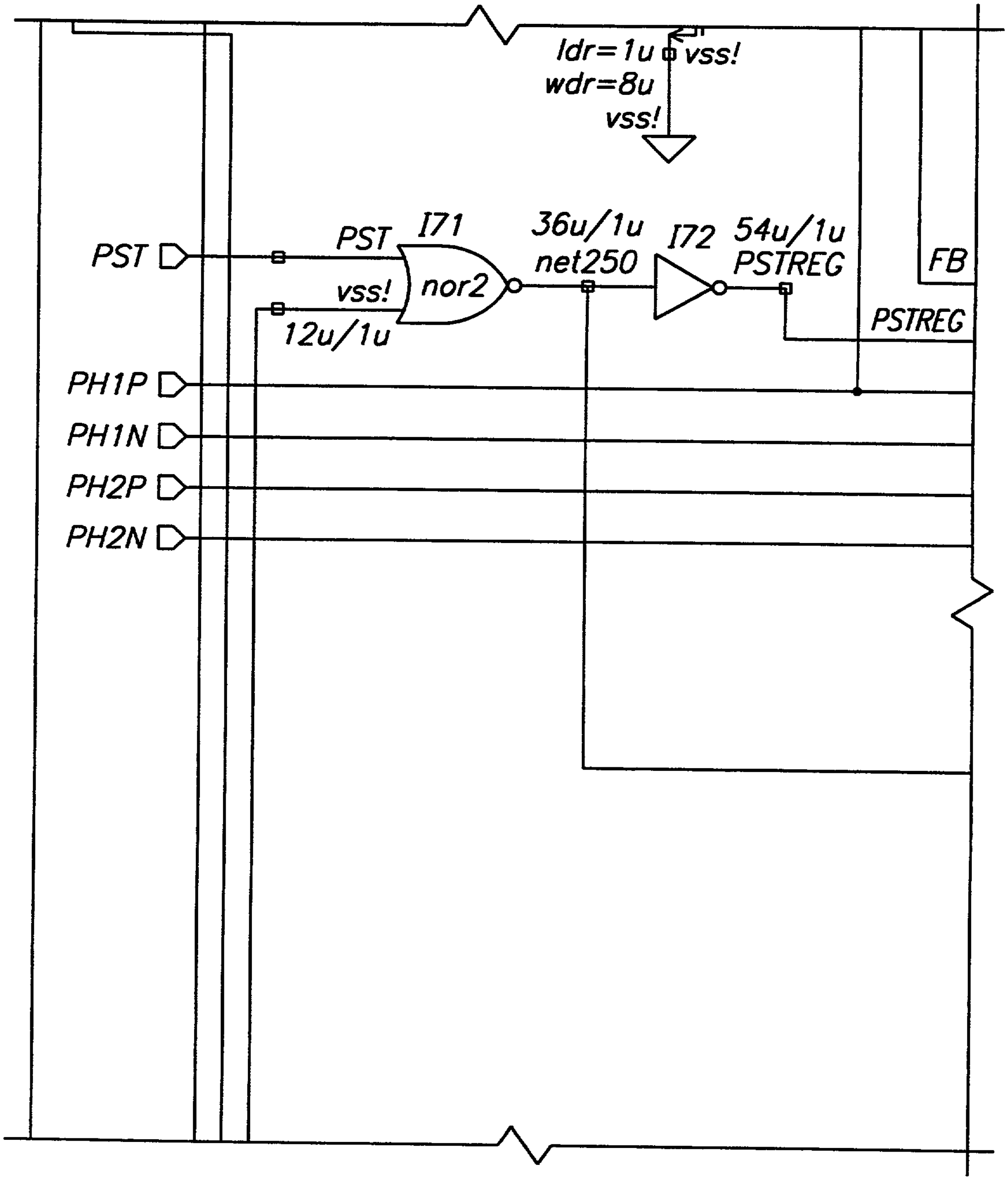

ldr=1u
vss!
wdr=8u
vss!
PST
I71
36u/1u
net250
I72
54u/1u
PSTREG
FB
PST
vss!
nor2
12u/1u
PSTREG
PH1P
PH1N
PH2P
PH2N

Fig 10.04BA

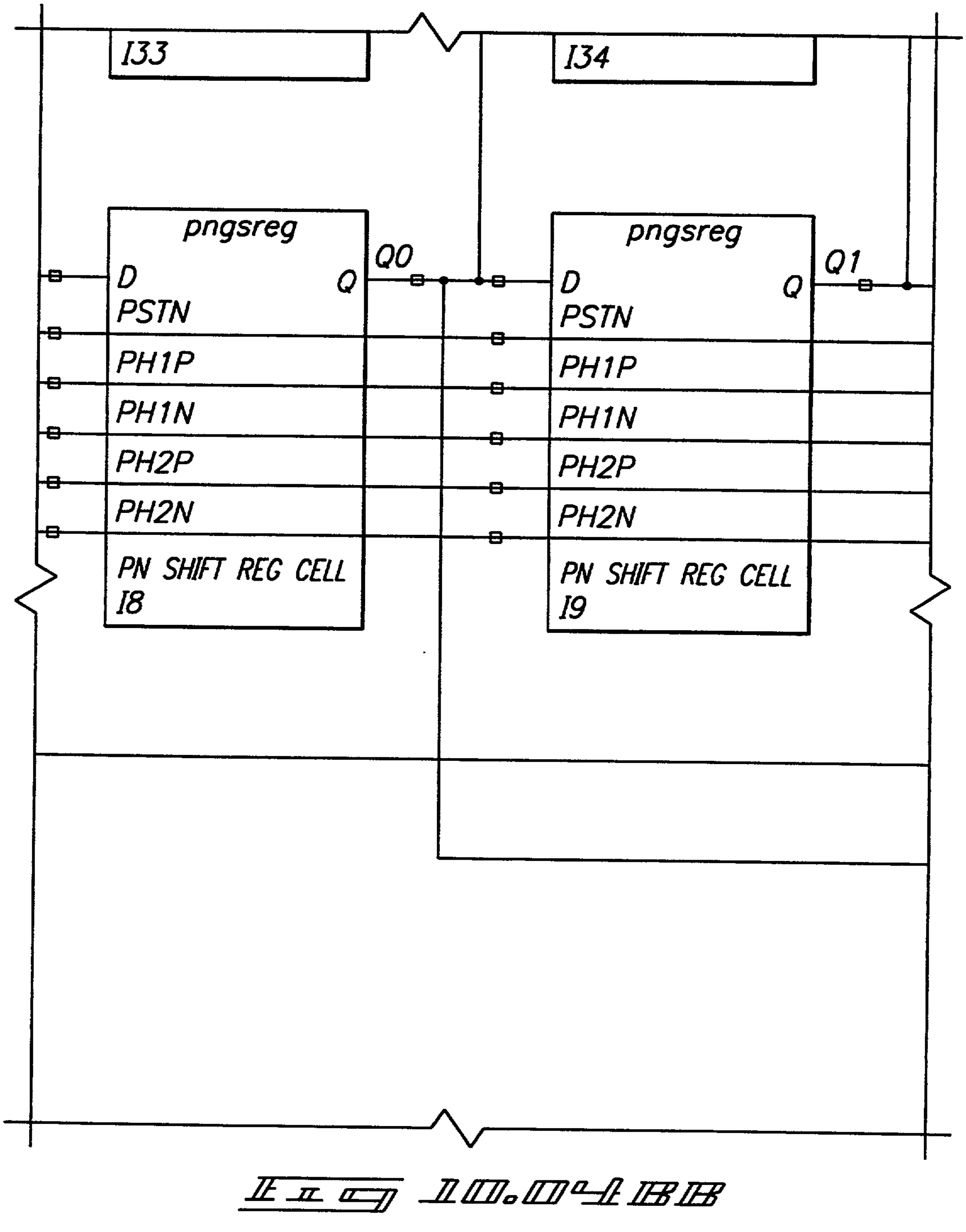

I33
I34
pngsreg
D
Q
Q0
PSTN
PH1P
PH1N
PH2P
PH2N
PN SHIFT REG CELL
I8
pngsreg
D
Q
Q1
PSTN
PH1P
PH1N
PH2P
PH2N
PN SHIFT REG CELL
I9

Fig 10.04BB

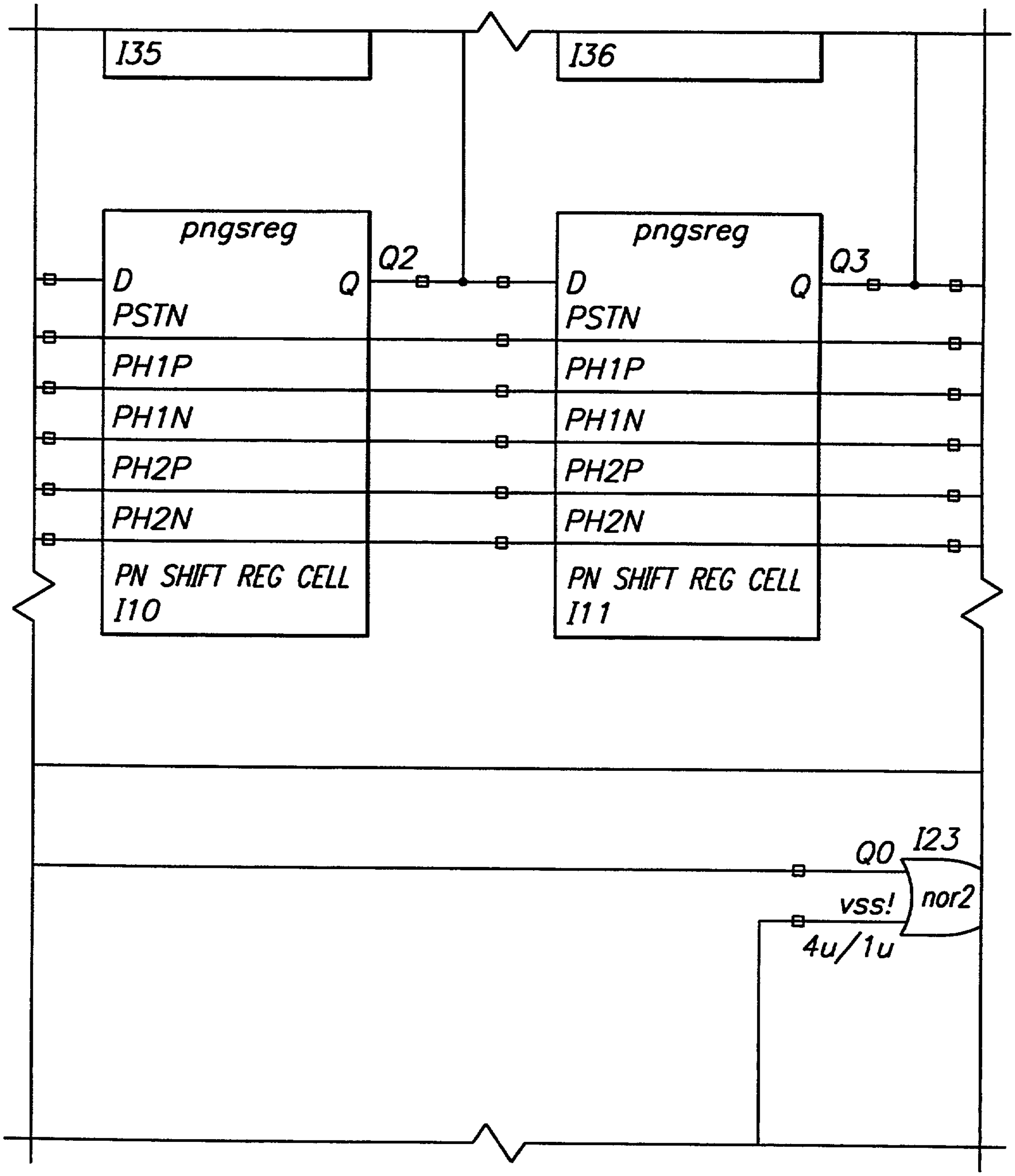

I35
I36
pngsreg
D
Q
PSTN
PH1P
PH1N
PH2P
PH2N
PN SHIFT REG CELL
I10
Q2
pngsreg
D
Q
PSTN
PH1P
PH1N
PH2P
PH2N
PN SHIFT REG CELL
I11
Q3
I23
Q0
vss!
nor2
4u/1u

Fig 10.04BC

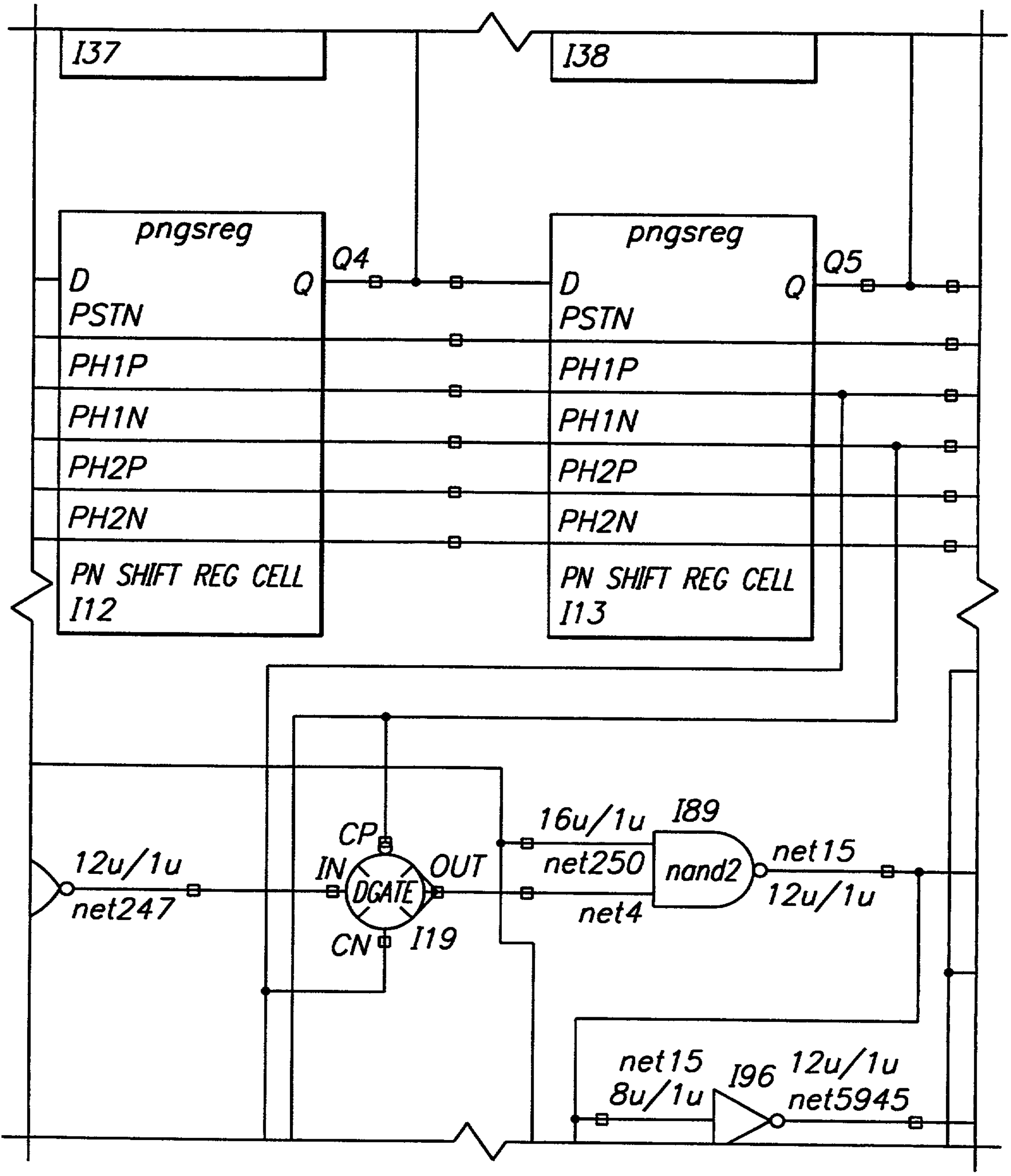

I37
I38
pngsreg
D
Q
PSTN
PH1P
PH1N
PH2P
PH2N
PN SHIFT REG CELL
I12
Q4
pngsreg
D
Q
PSTN
PH1P
PH1N
PH2P
PH2N
PN SHIFT REG CELL
I13
Q5
12u/1u
net247
CP
IN
DGATE
OUT
CN
I19
16u/1u
I89
net250
nand2
net4
net15
12u/1u
net15
8u/1u
I96
12u/1u
net5945

Fig 10.04BD

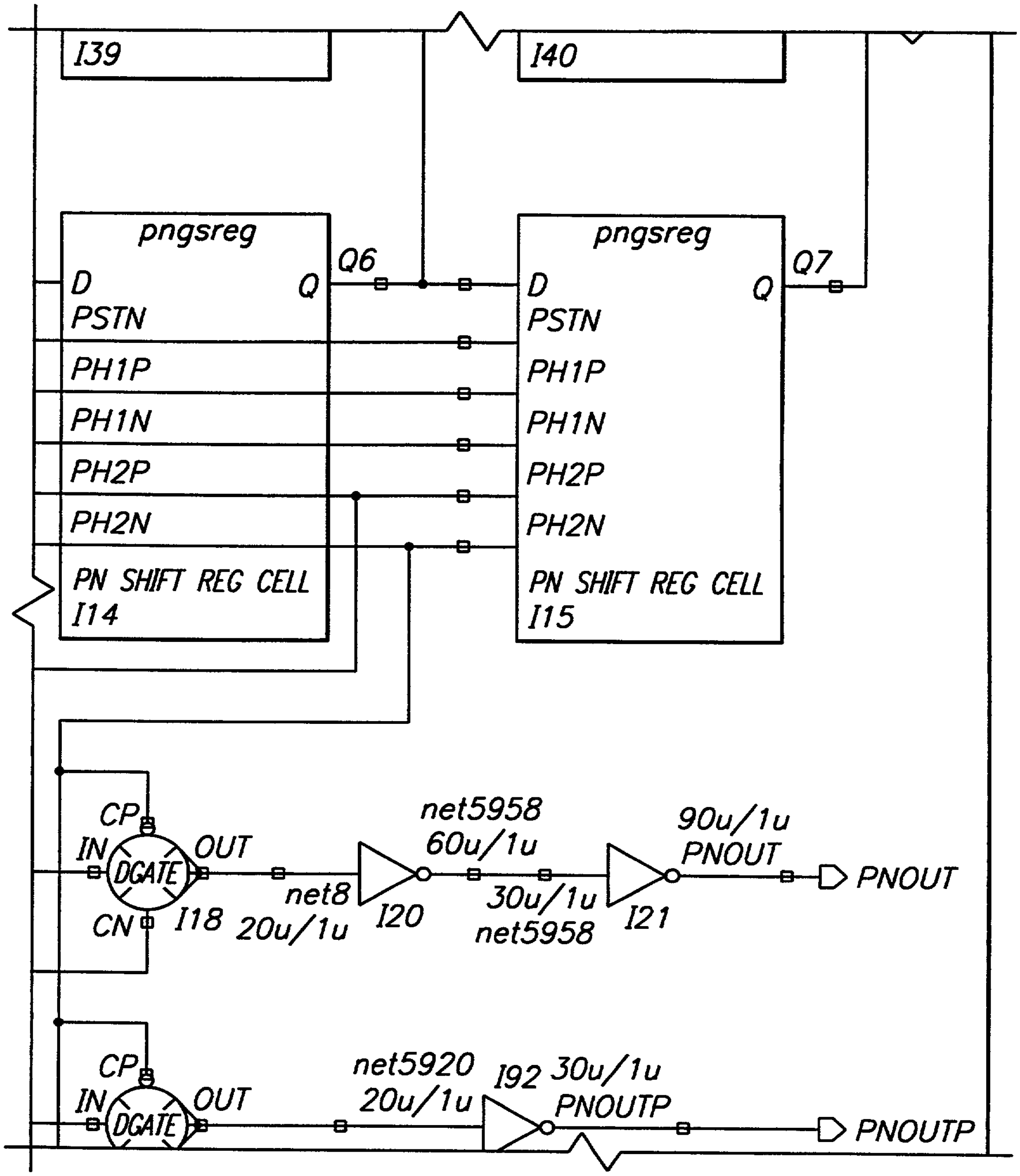

I39
I40
pngsreg
D
Q
Q6
PSTN
PH1P
PH1N
PH2P
PH2N
PN SHIFT REG CELL
I14
pngsreg
D
Q
Q7
PSTN
PH1P
PH1N
PH2P
PH2N
PN SHIFT REG CELL
I15
CP
IN
DGATE
OUT
CN
I18
net8
20u/1u
I20
net5958
60u/1u
30u/1u
net5958
I21
90u/1u
PNOUT
PNOUT
CP
IN
DGATE
OUT
net5920
20u/1u
I92
30u/1u
PNOUTP
PNOUTP

Fig 10.04BE

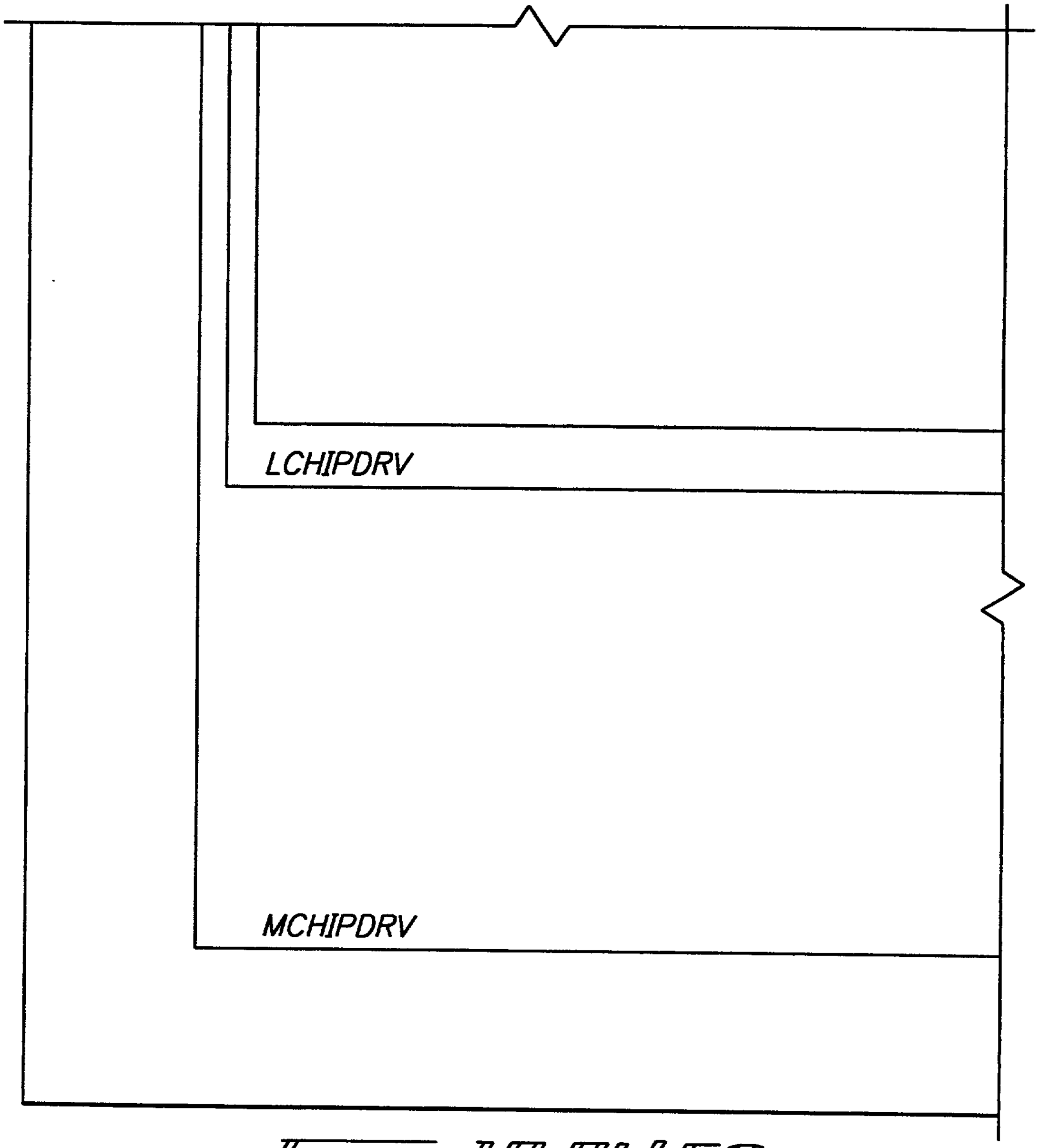


Fig 10.04CA

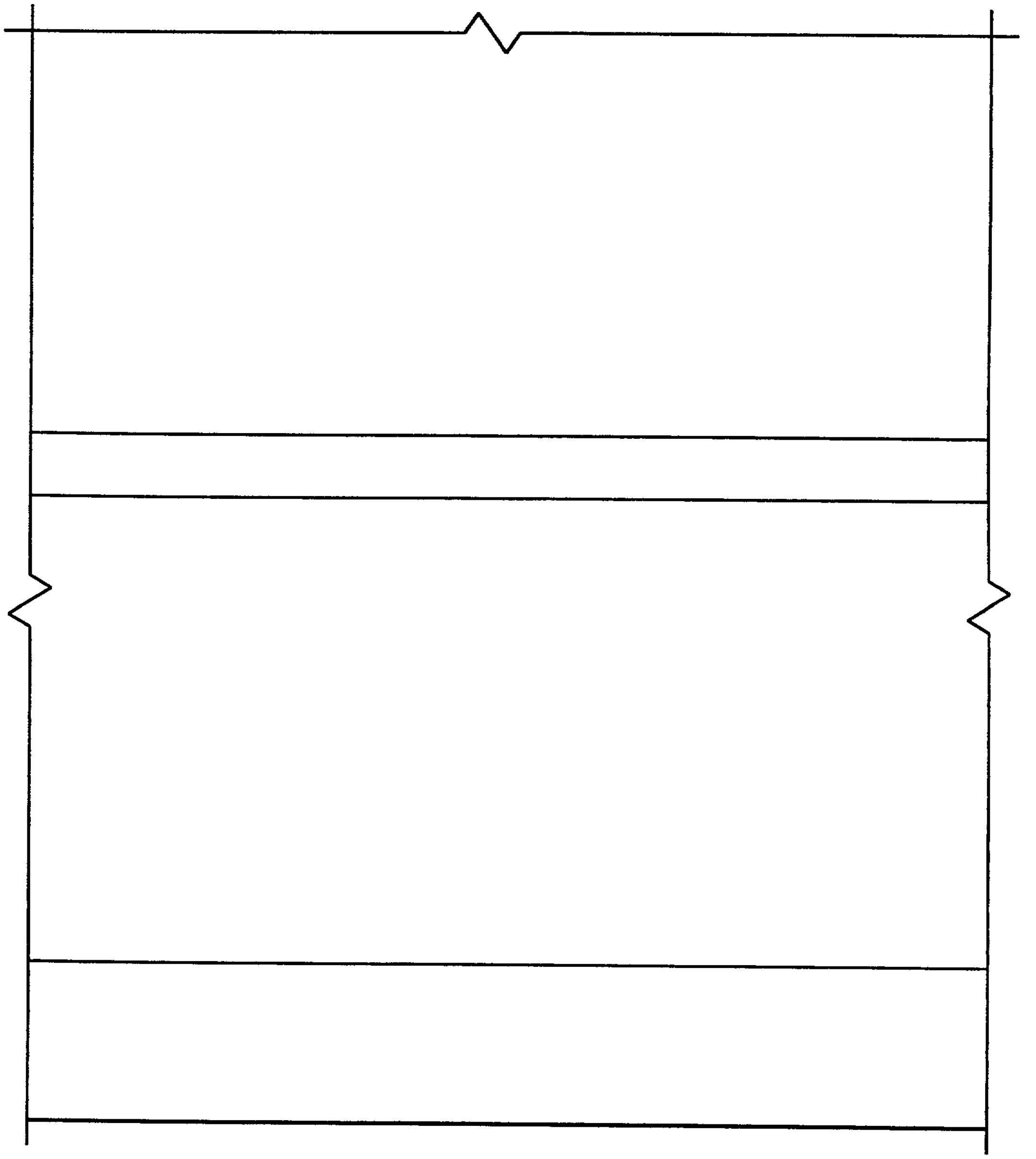


Fig 10.04CB

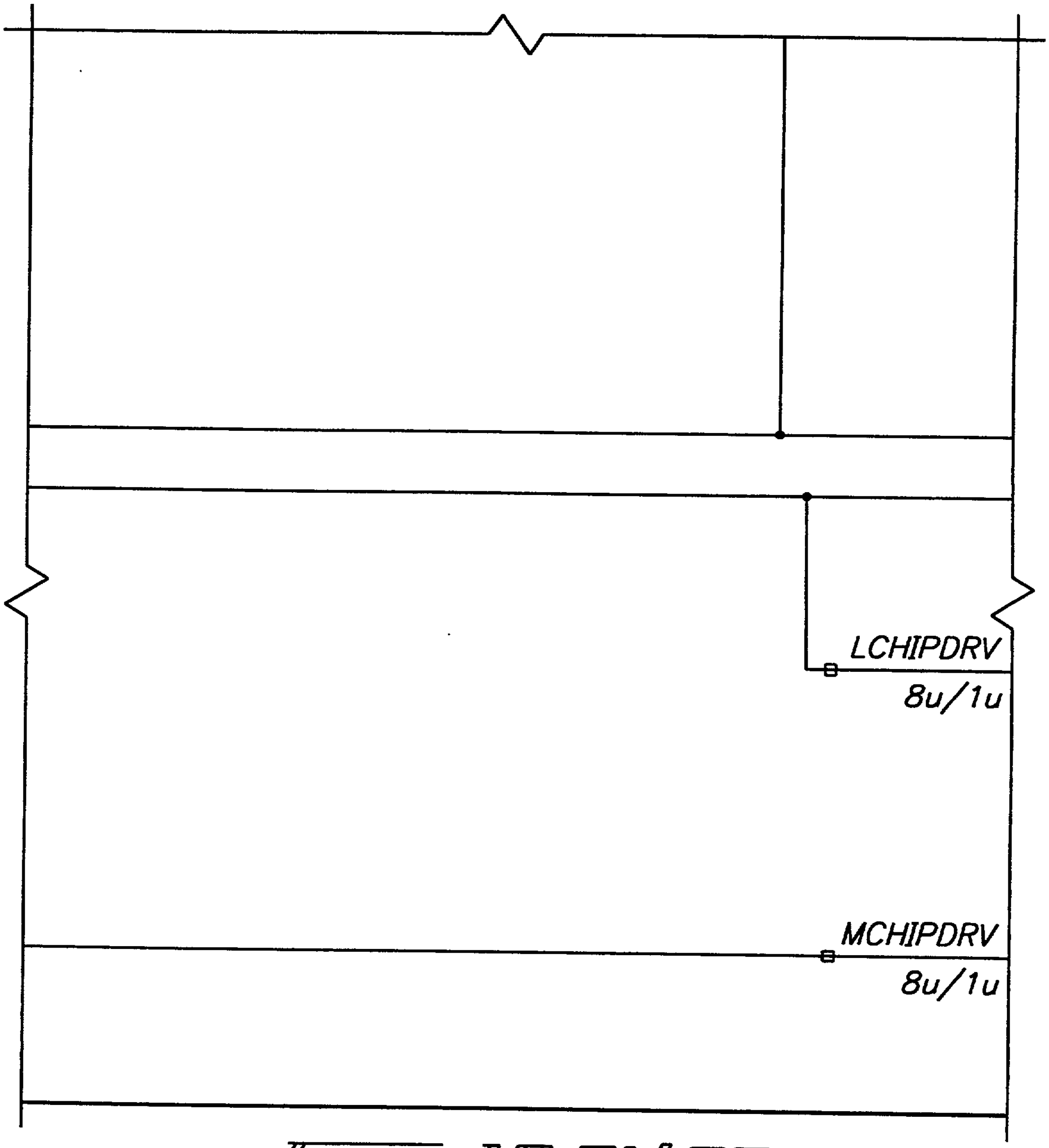


Fig 10.04CC

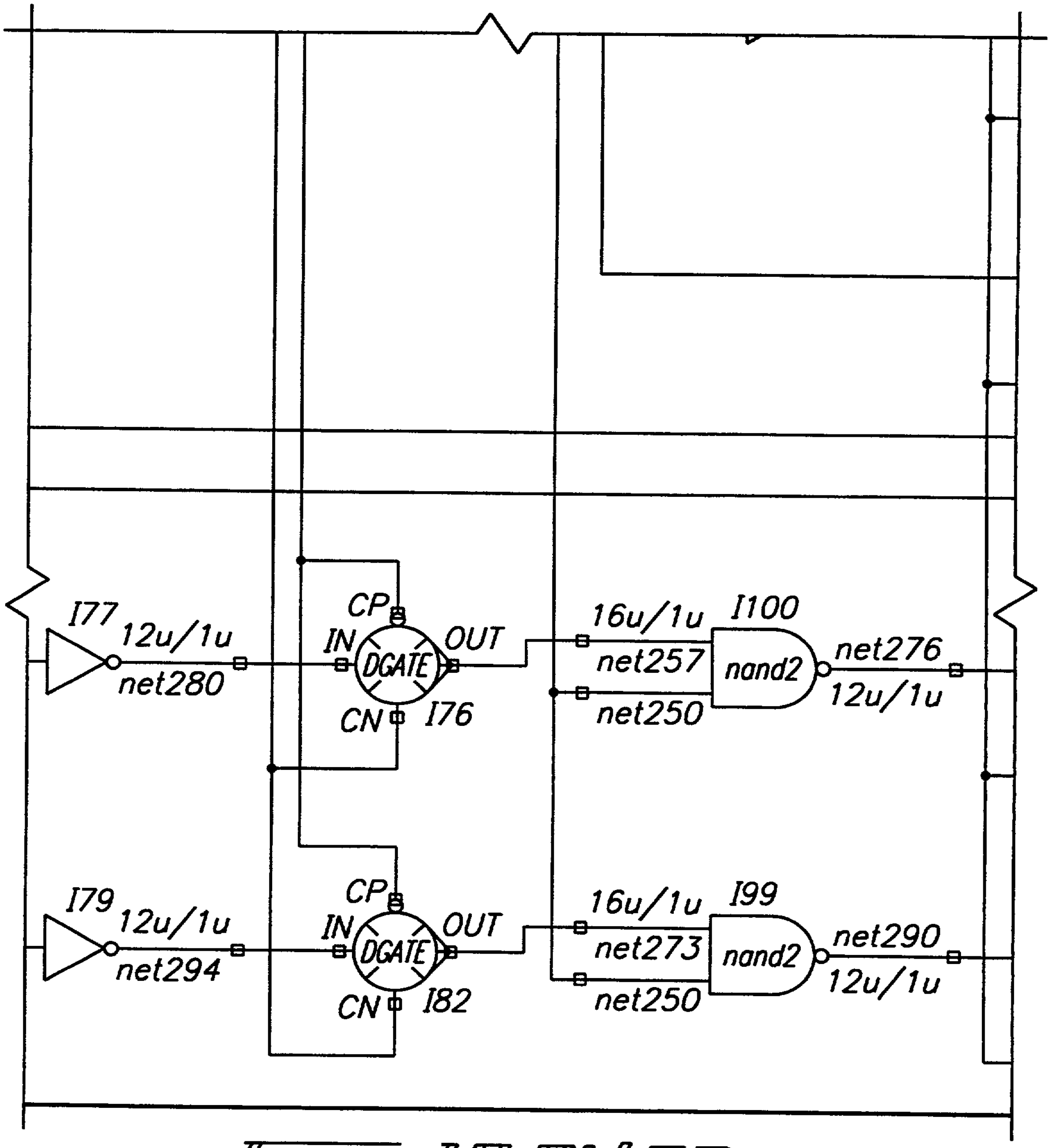

I77
12u/1u
net280
CP
IN
DGATE
OUT
CN
I76
16u/1u
I100
net257
nand2
net276
net250
12u/1u
I79
12u/1u
net294
CP
IN
DGATE
OUT
CN
I82
16u/1u
I99
net273
nand2
net290
net250
12u/1u

Fig 10.04CD

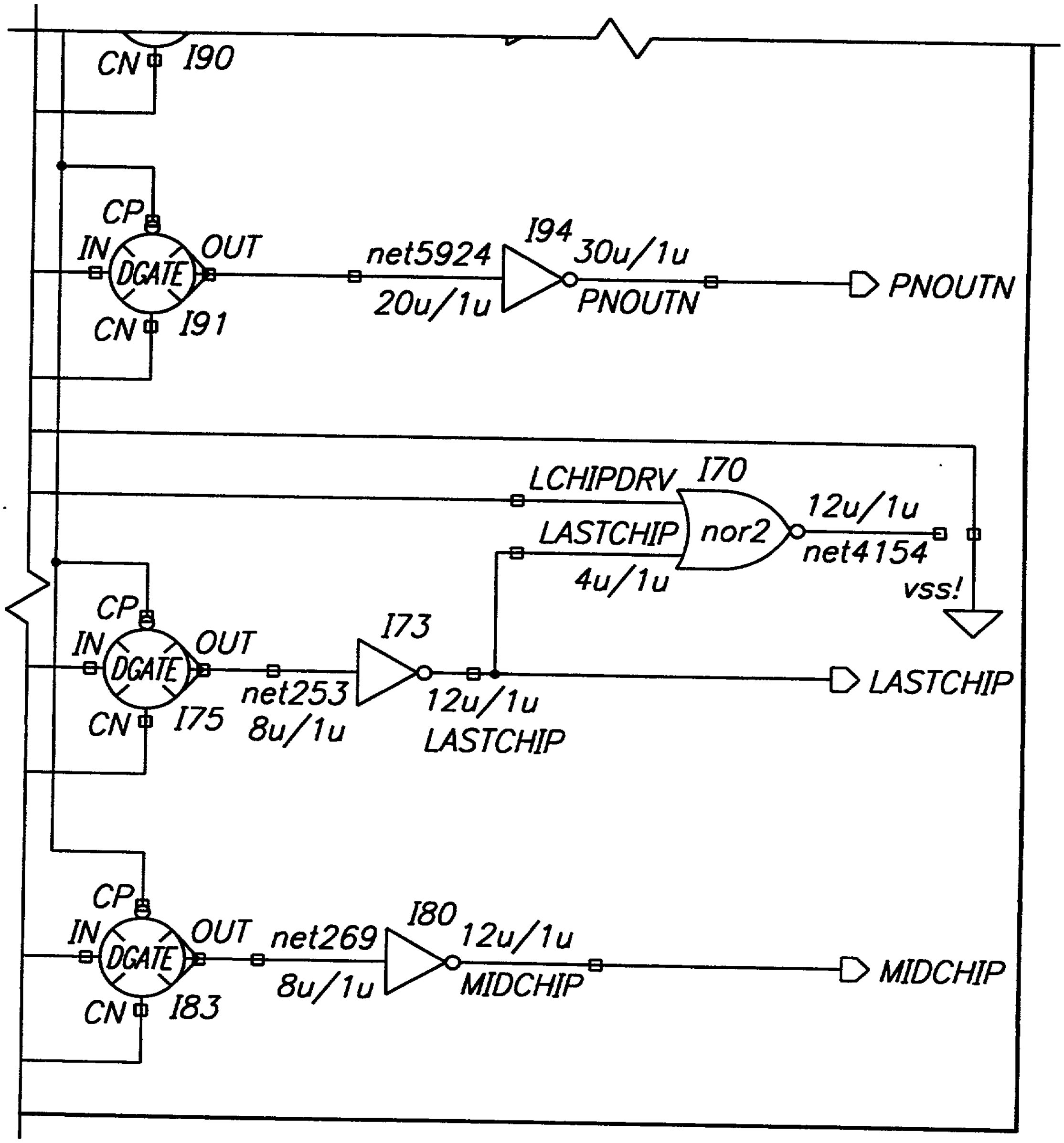

CN
I90
CP
IN
DGATE
OUT
CN
I91
net5924
20u/1u
I94
30u/1u
PNOUTN
PNOUTN
LCHIPDRV
I70
LASTCHIP
4u/1u
nor2
12u/1u
net4154
vss!
CP
IN
DGATE
OUT
CN
I75
net253
8u/1u
I73
12u/1u
LASTCHIP
LASTCHIP
CP
IN
DGATE
OUT
CN
I83
net269
8u/1u
I80
12u/1u
MIDCHIP
MIDCHIP

Fig 10.04CE

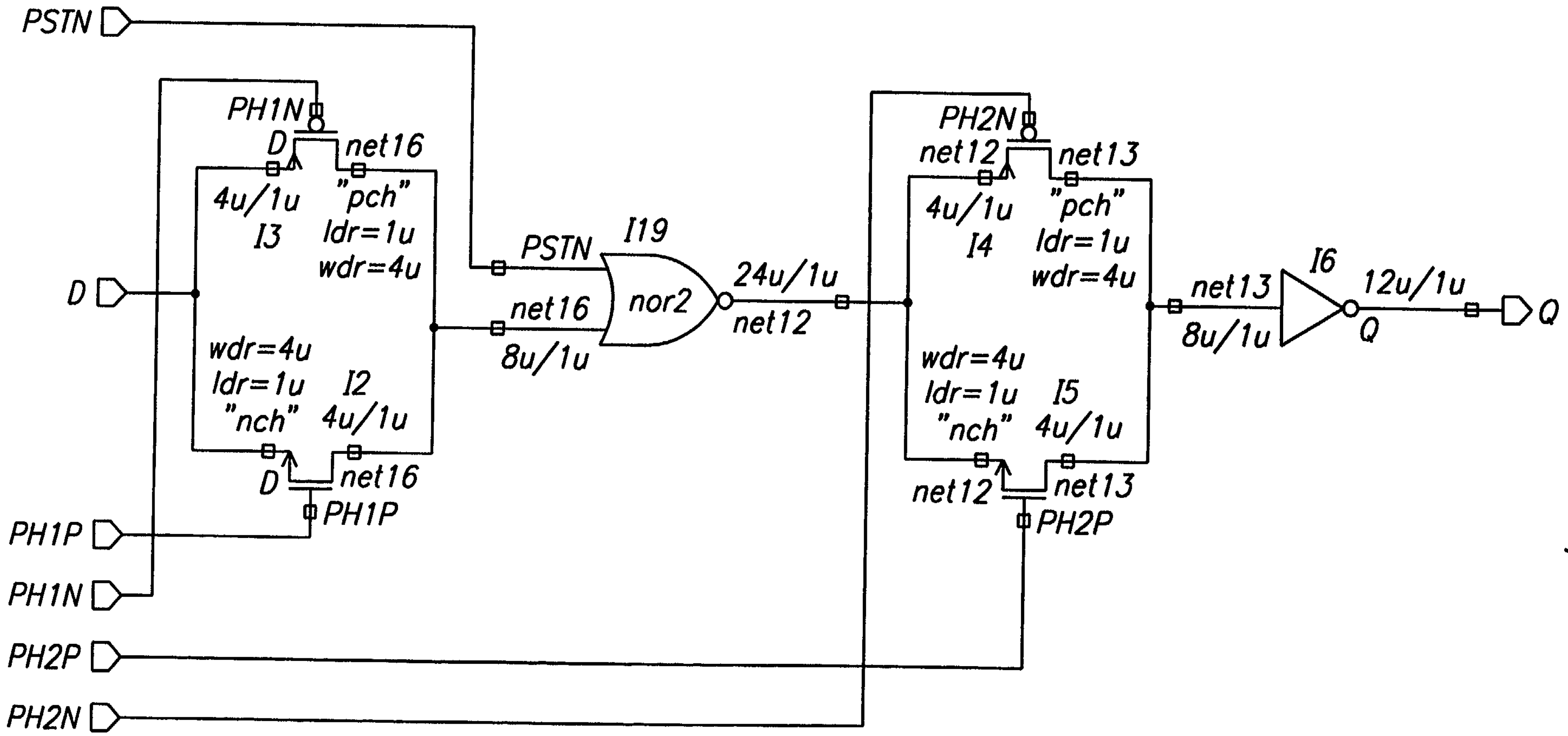

PSTN
D
PH1P
PH1N
PH2P
PH2N
PH1N
D
net16
4u/1u
I3
"pch"
ldr=1u
wdr=4u
wdr=4u
ldr=1u
"nch"
I2
4u/1u
D
net16
PH1P
PSTN
I19
nor2
net16
8u/1u
24u/1u
net12
PH2N
net12
net13
4u/1u
I4
"pch"
ldr=1u
wdr=4u
wdr=4u
ldr=1u
"nch"
I5
4u/1u
net12
net13
PH2P
net13
8u/1u
I6
12u/1u
Q
Q

Fig 10.0401

10.0402AA	10.0402AB
10.0402BA	10.0402BB
10.0402CA	10.0402CB

Fig 10.0402

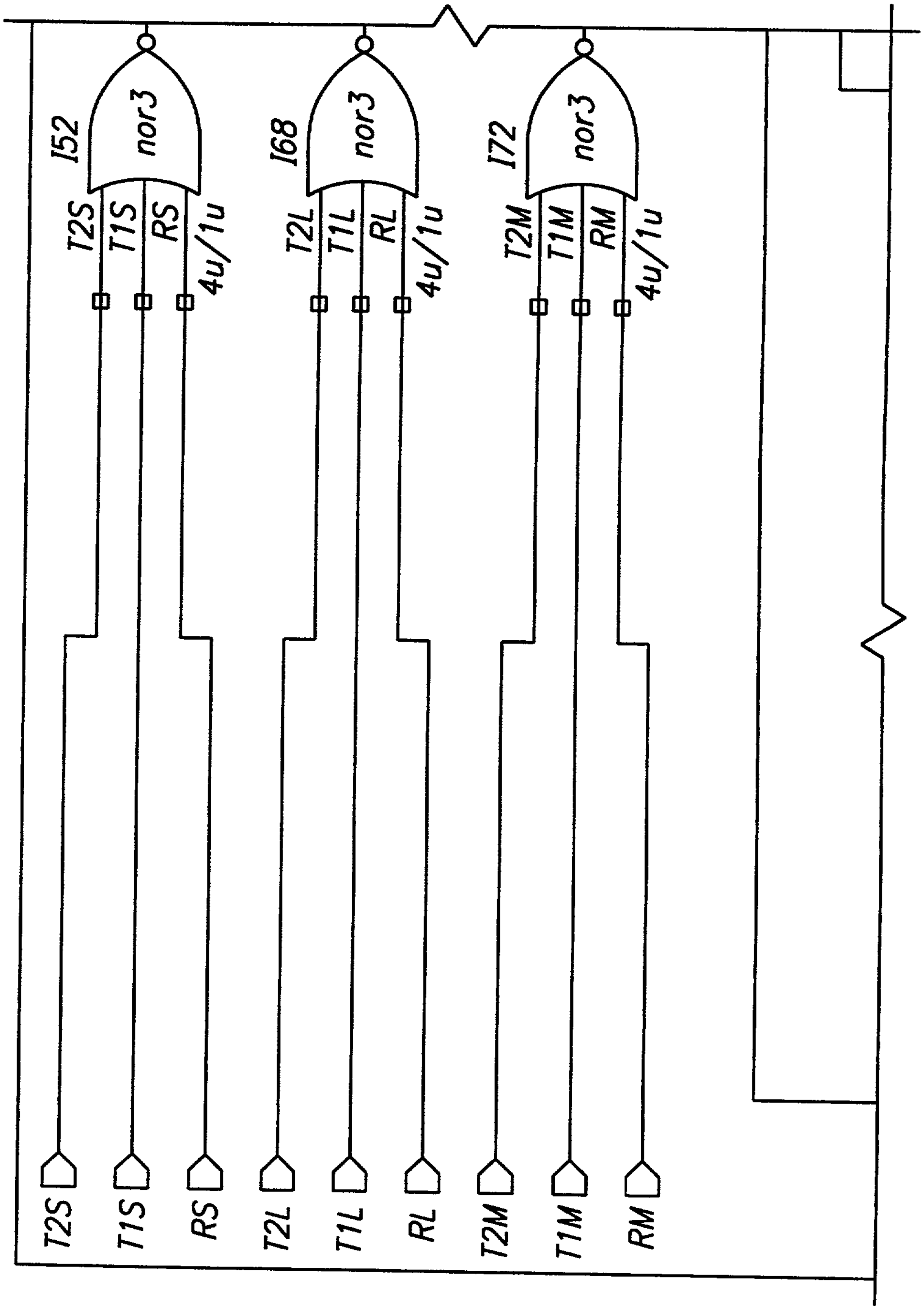


Fig. 10.01.07AA

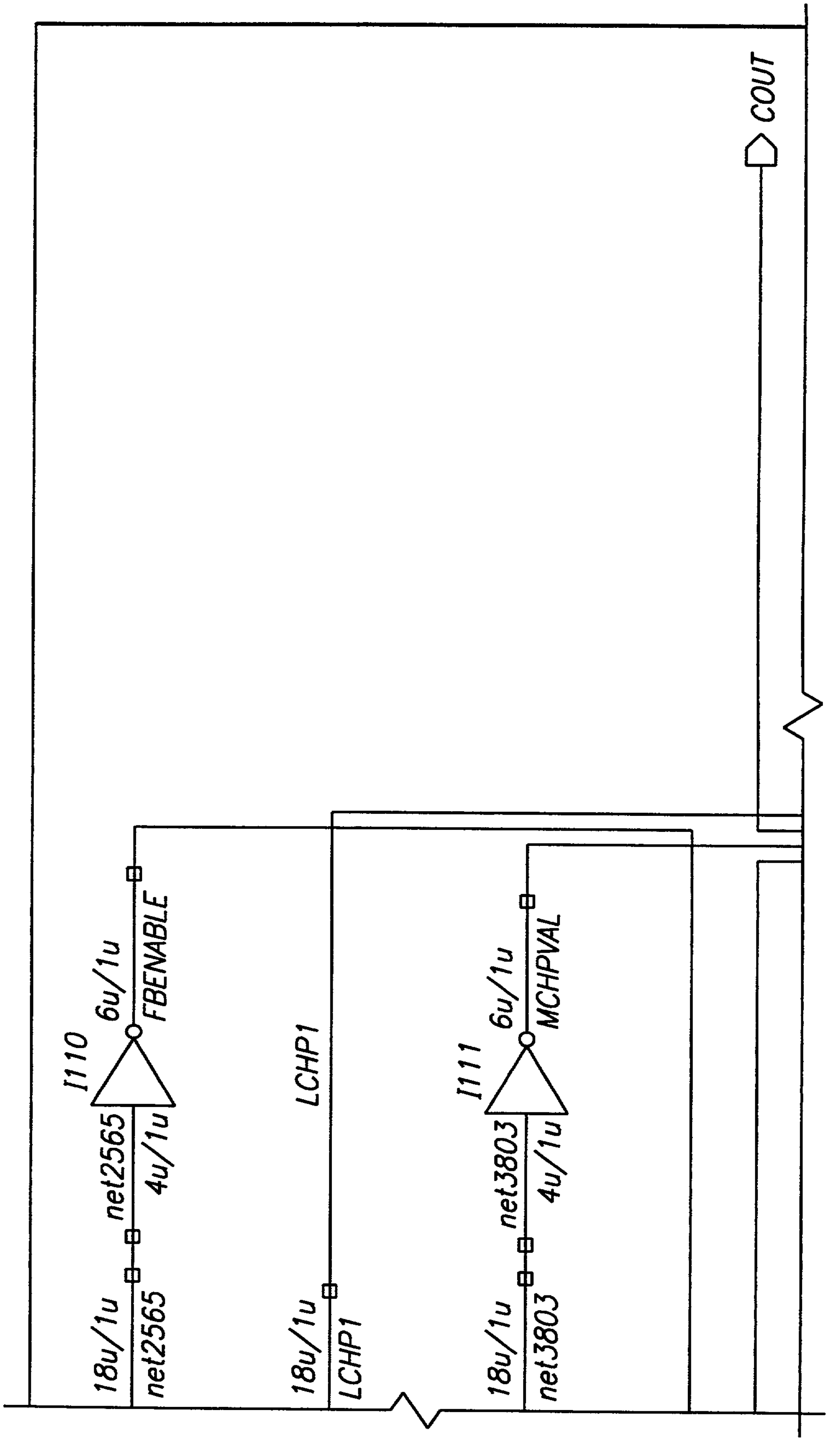


Fig 10.0402AB

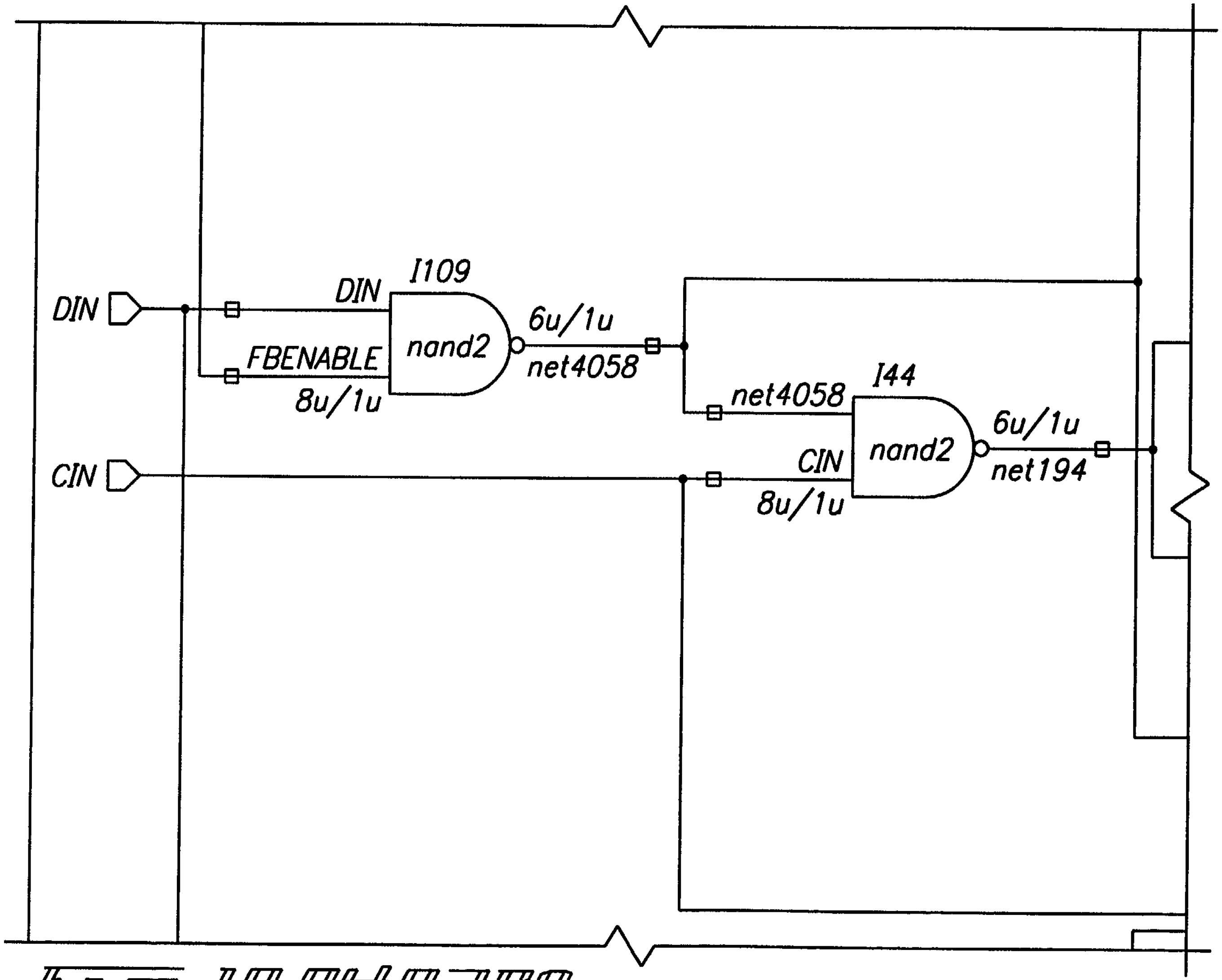


FIG 10.0402BA

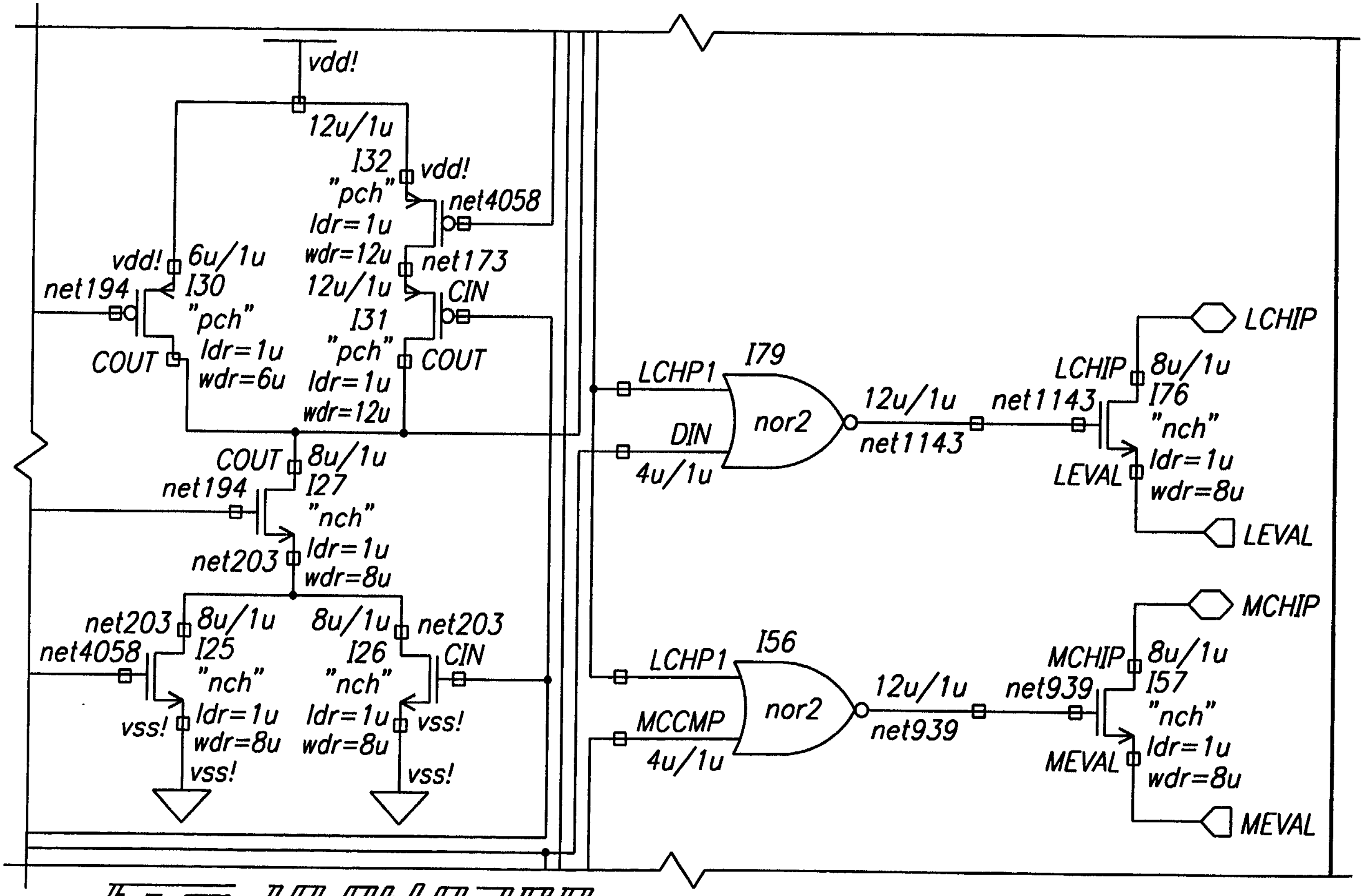


Fig 10.0402BB

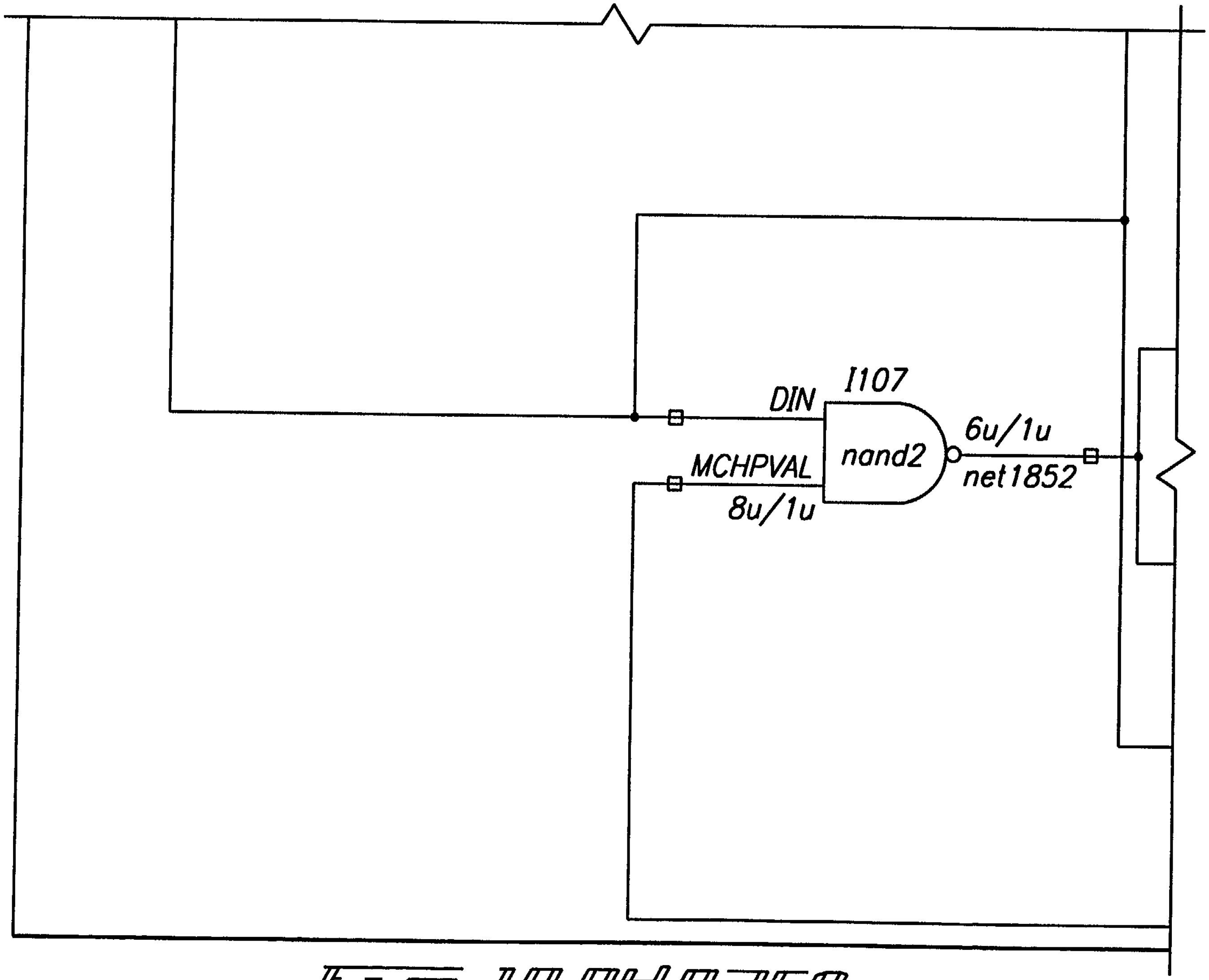


Fig 10.0402CA

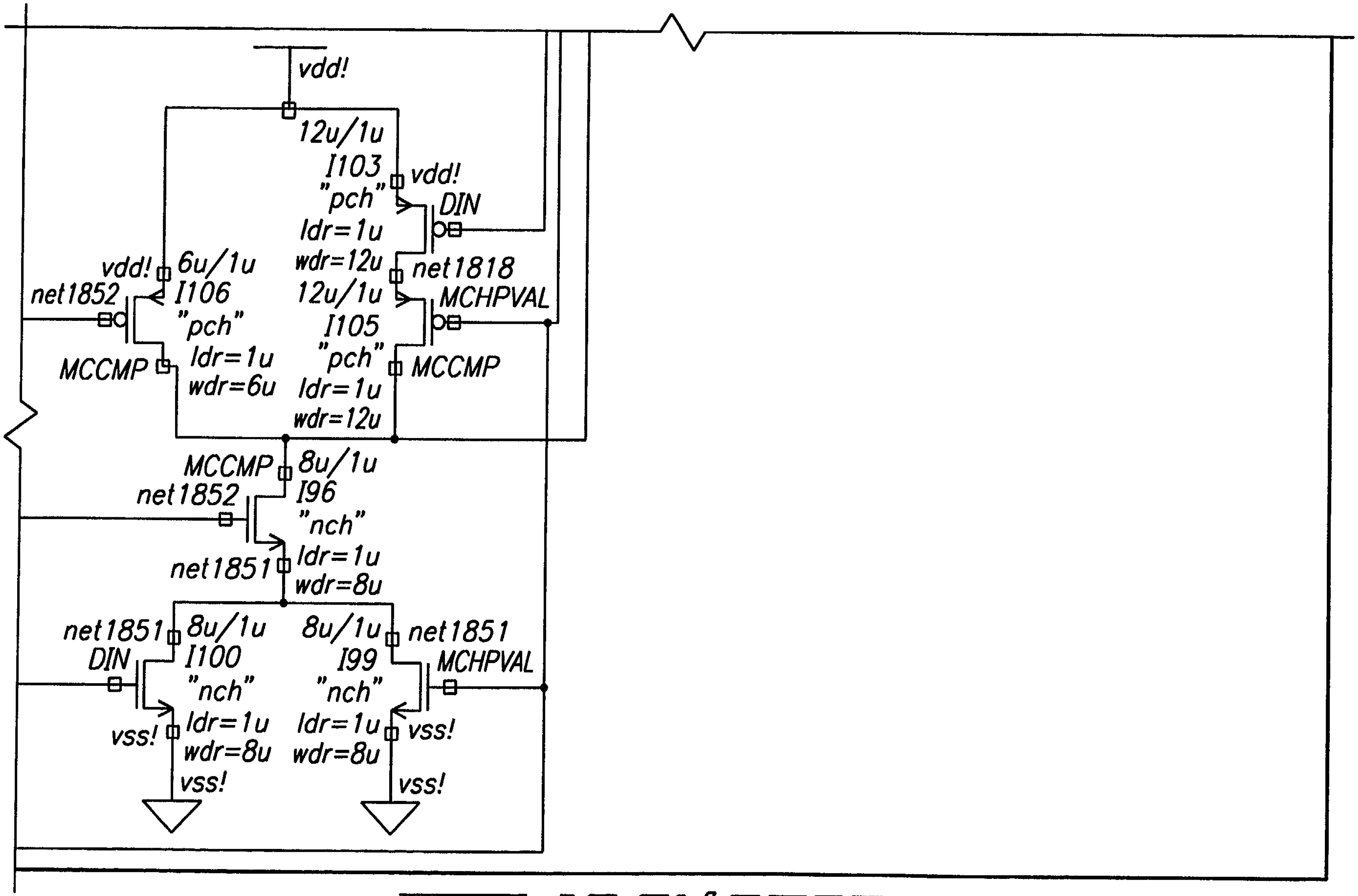


Fig 10.0402CB

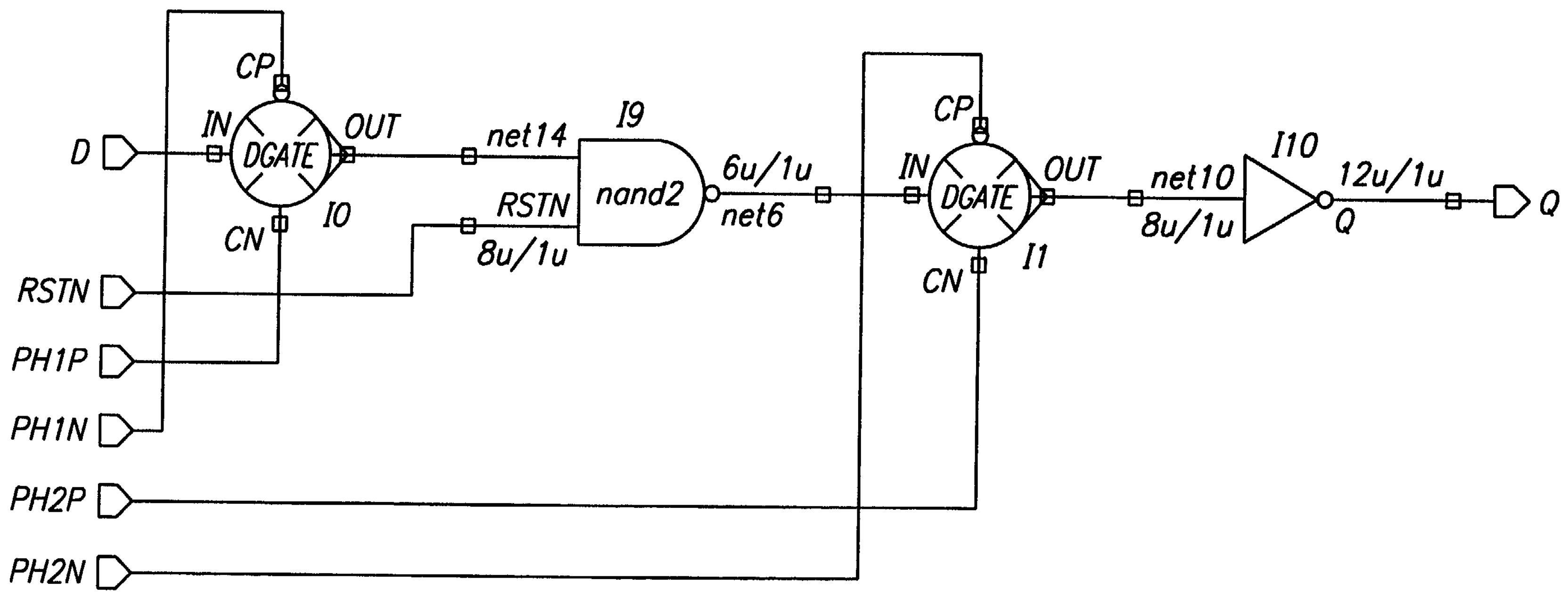

D
RSTN
PH1P
PH1N
PH2P
PH2N
CP
IN
DGATE
OUT
CN
I0
net14
I9
nand2
RSTN
8u/1u
6u/1u
net6
CP
IN
DGATE
OUT
CN
I1
net10
8u/1u
I10
12u/1u
Q
Q

Fig 10.05

10.06AA	10.06AB	10.06AC	10.06AD							
10.06BA	10.06BB	10.06BC	10.06BD	10.06BE	10.06BF	10.06BG	10.06BH	10.06BI	10.06BJ	10.06BK
10.06CA	10.06CB	10.06CC	10.06CD	10.06CE	10.06CF	10.06CG	10.06CH	10.06CI	10.06CJ	10.06CK
10.06DA	10.06DB	10.06DC	10.06DD	10.06DE	10.06DF	10.06DG	10.06DH			

Fig 10.06

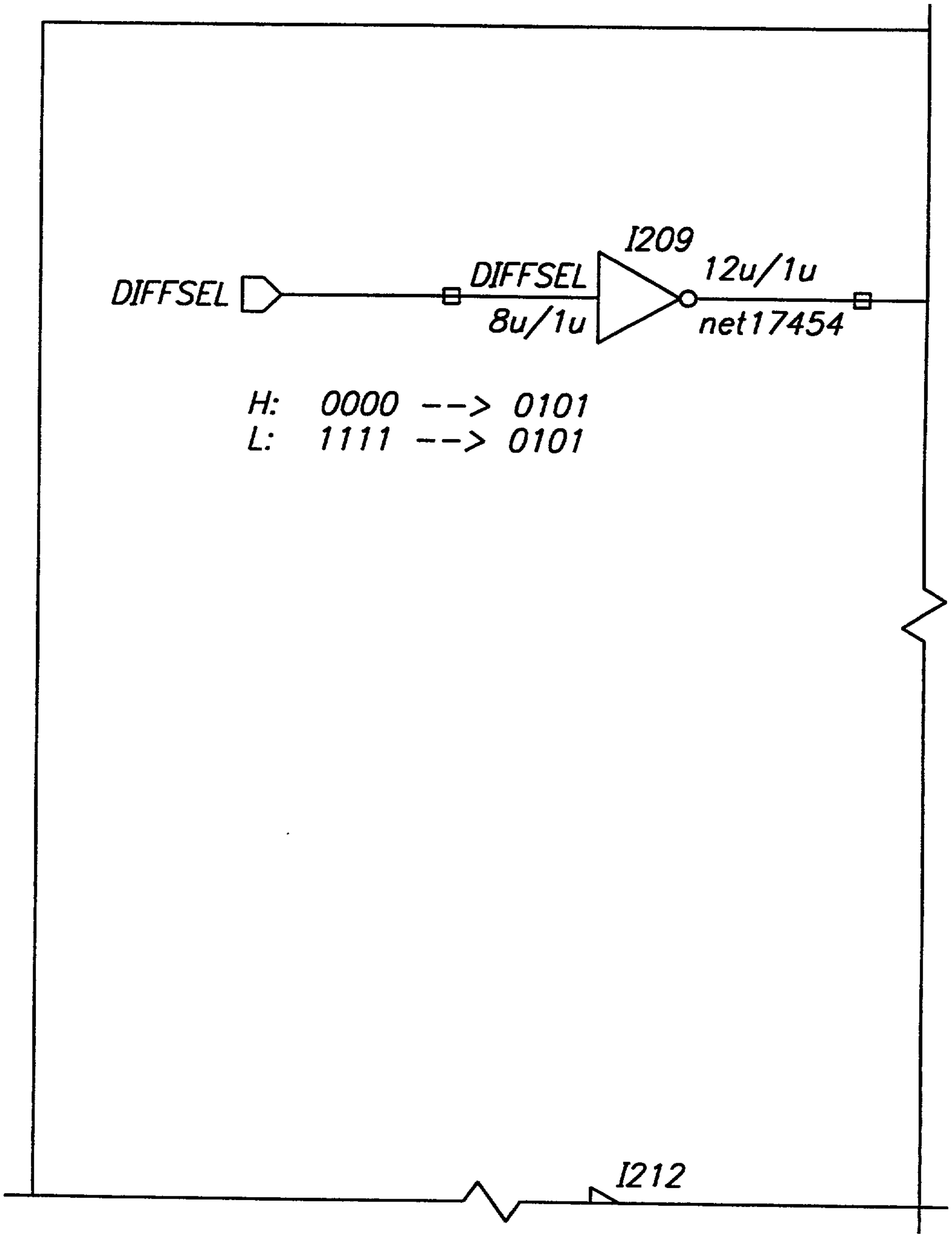

DIFFSEL
DIFFSEL
8u/1u
I209
12u/1u
net17454
H: 0000 --> 0101
L: 1111 --> 0101
I212

Fig 10.06AA

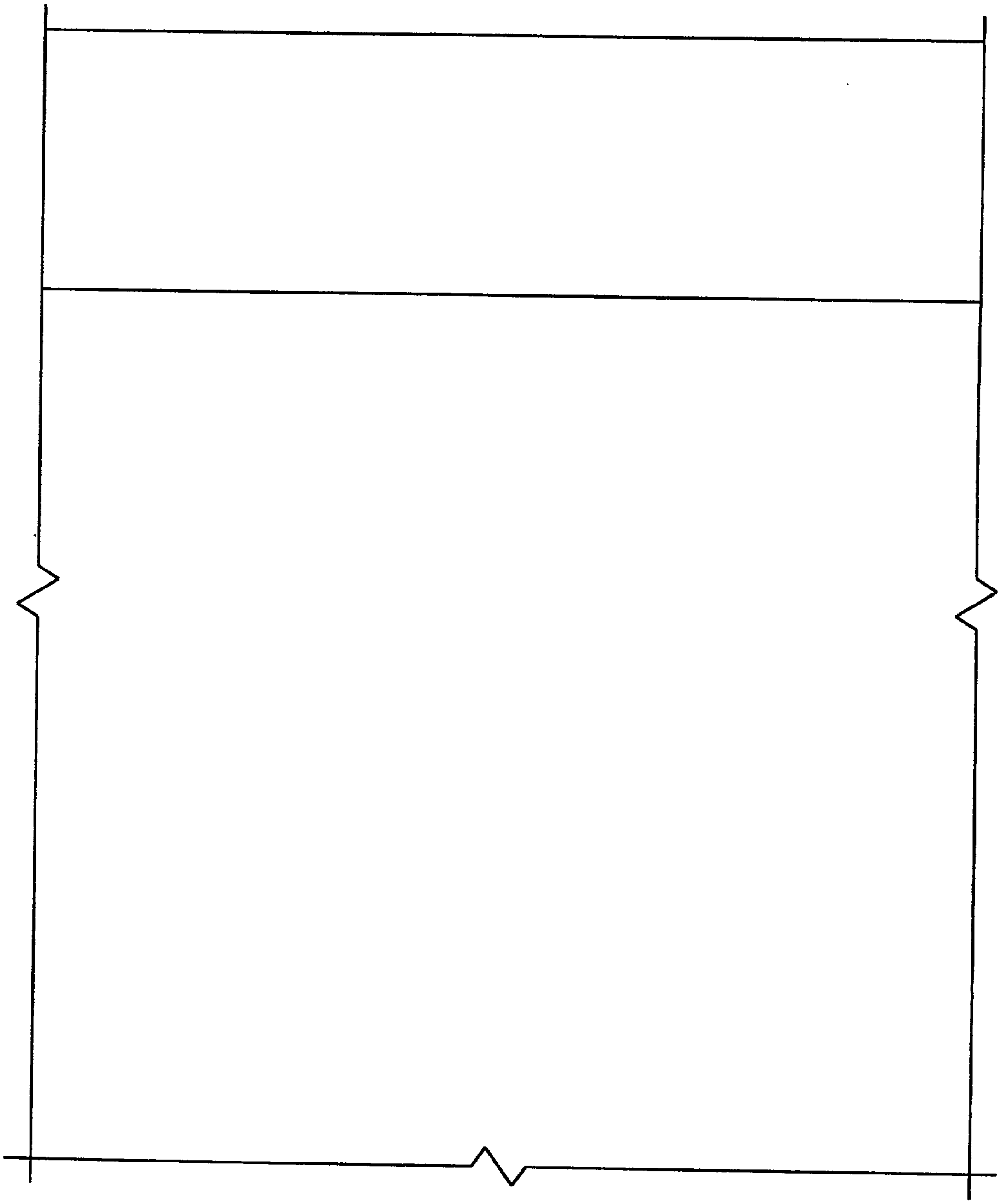


Fig 10.06AB

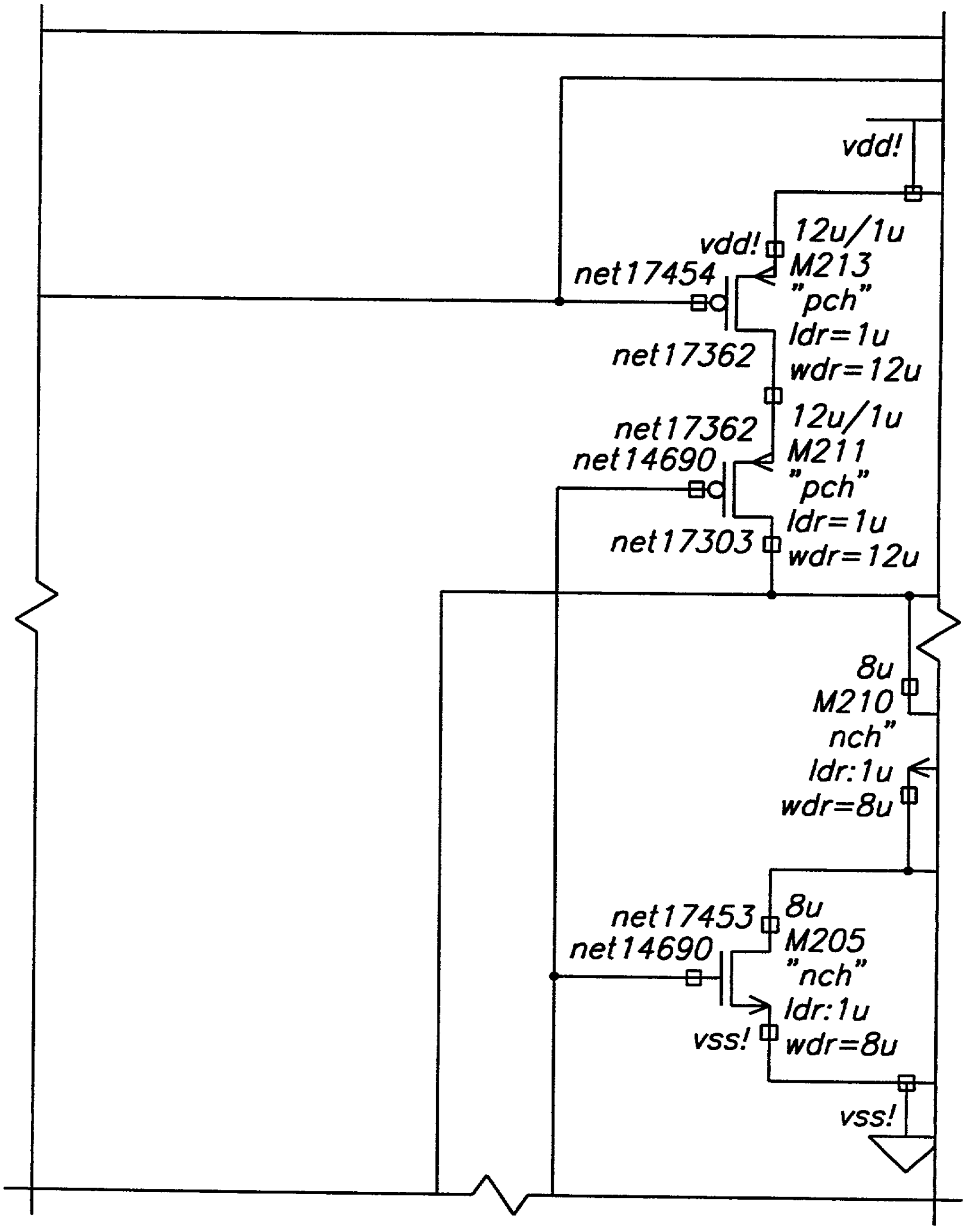

vdd!
vdd!
12u/1u
M213
"pch"
ldr=1u
wdr=12u
net17454
net17362
net17362
net14690
12u/1u
M211
"pch"
ldr=1u
wdr=12u
net17303
8u
M210
nch"
ldr:1u
wdr=8u
net17453
net14690
8u
M205
"nch"
ldr:1u
wdr=8u
vss!
vss!

Fig 10.06AC

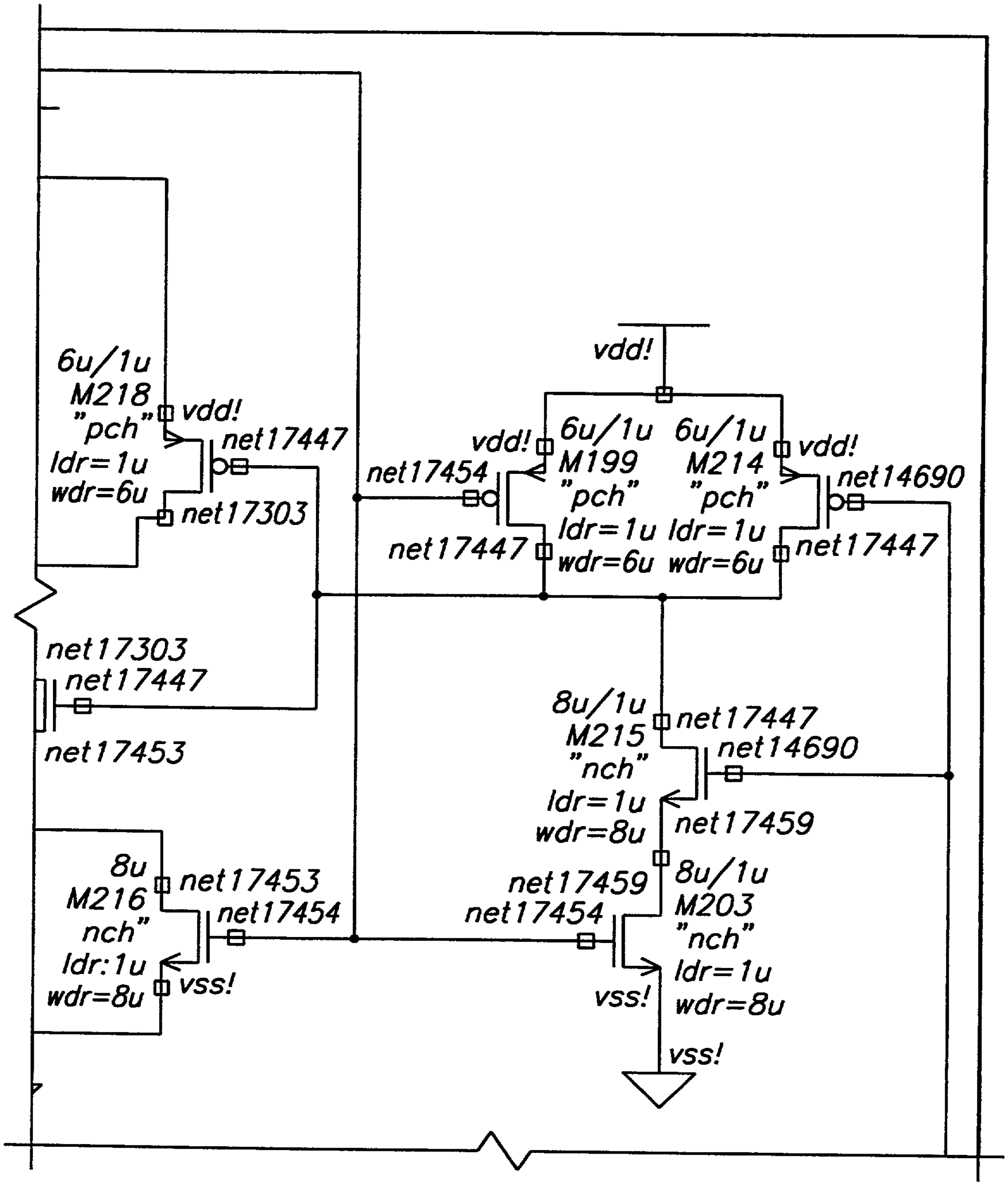

6u/1u
M218
"pch"
ldr=1u
wdr=6u
vdd!
net17447
net17303
net17303
net17447
net17453
8u
M216
nch"
ldr:1u
wdr=8u
net17453
net17454
vss!
vdd!
vdd!
6u/1u
M199
"pch"
ldr=1u
wdr=6u
net17454
net17447
6u/1u
M214
"pch"
ldr=1u
wdr=6u
vdd!
net14690
net17447
8u/1u
M215
"nch"
ldr=1u
wdr=8u
net17447
net14690
net17459
net17459
net17454
8u/1u
M203
"nch"
ldr=1u
wdr=8u
vss!
vss!

Fig 10.06AD

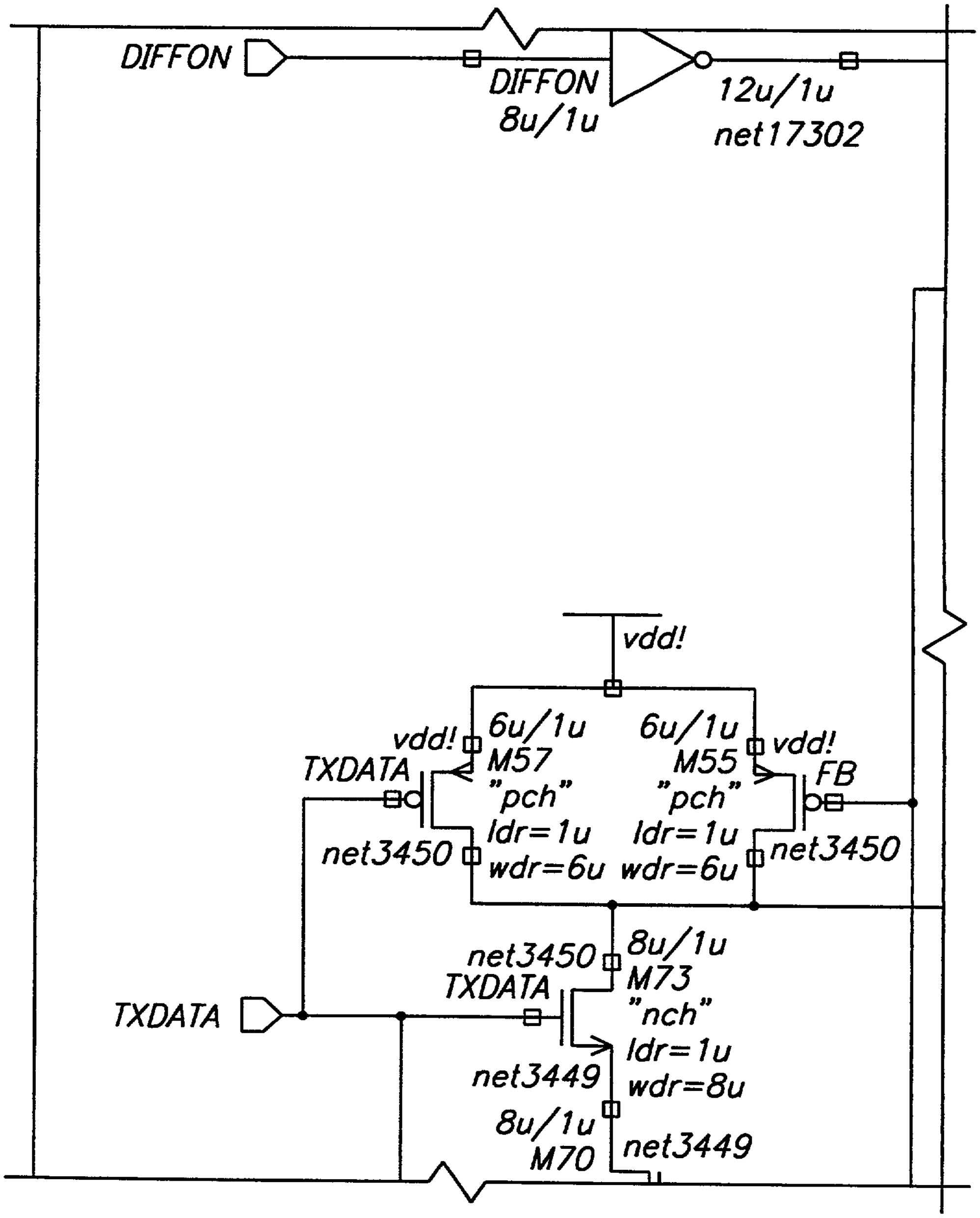

DIFFON
DIFFON
8u/1u
12u/1u
net17302
vdd!
vdd!
6u/1u
M57
"pch"
ldr=1u
wdr=6u
6u/1u
M55
"pch"
ldr=1u
wdr=6u
vdd!
TXDATA
FB
net3450
net3450
net3450
8u/1u
M73
"nch"
ldr=1u
wdr=8u
TXDATA
TXDATA
net3449
8u/1u
M70
net3449

Fig 10.06BA

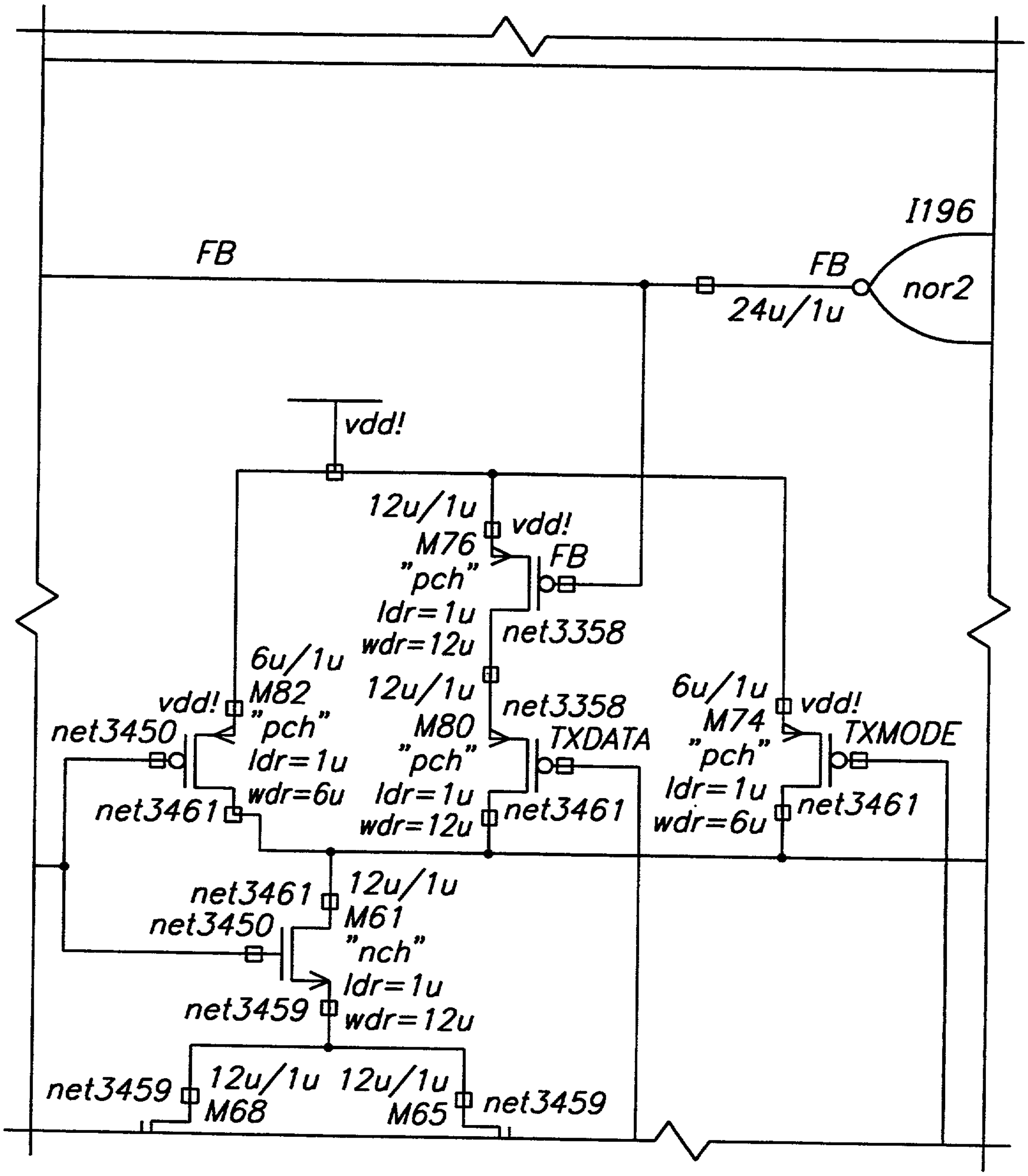

I196
FB
FB
nor2
24u/1u
vdd!
12u/1u
M76
"pch"
ldr=1u
wdr=12u
vdd!
FB
net3358
6u/1u
M82
"pch"
ldr=1u
wdr=6u
vdd!
net3450
net3461
12u/1u
M80
"pch"
ldr=1u
wdr=12u
net3358
TXDATA
net3461
6u/1u
M74
"pch"
ldr=1u
wdr=6u
vdd!
TXMODE
net3461
net3461
12u/1u
M61
net3450
"nch"
ldr=1u
wdr=12u
net3459
net3459
12u/1u
M68
12u/1u
M65
net3459

Fig 10.06BB

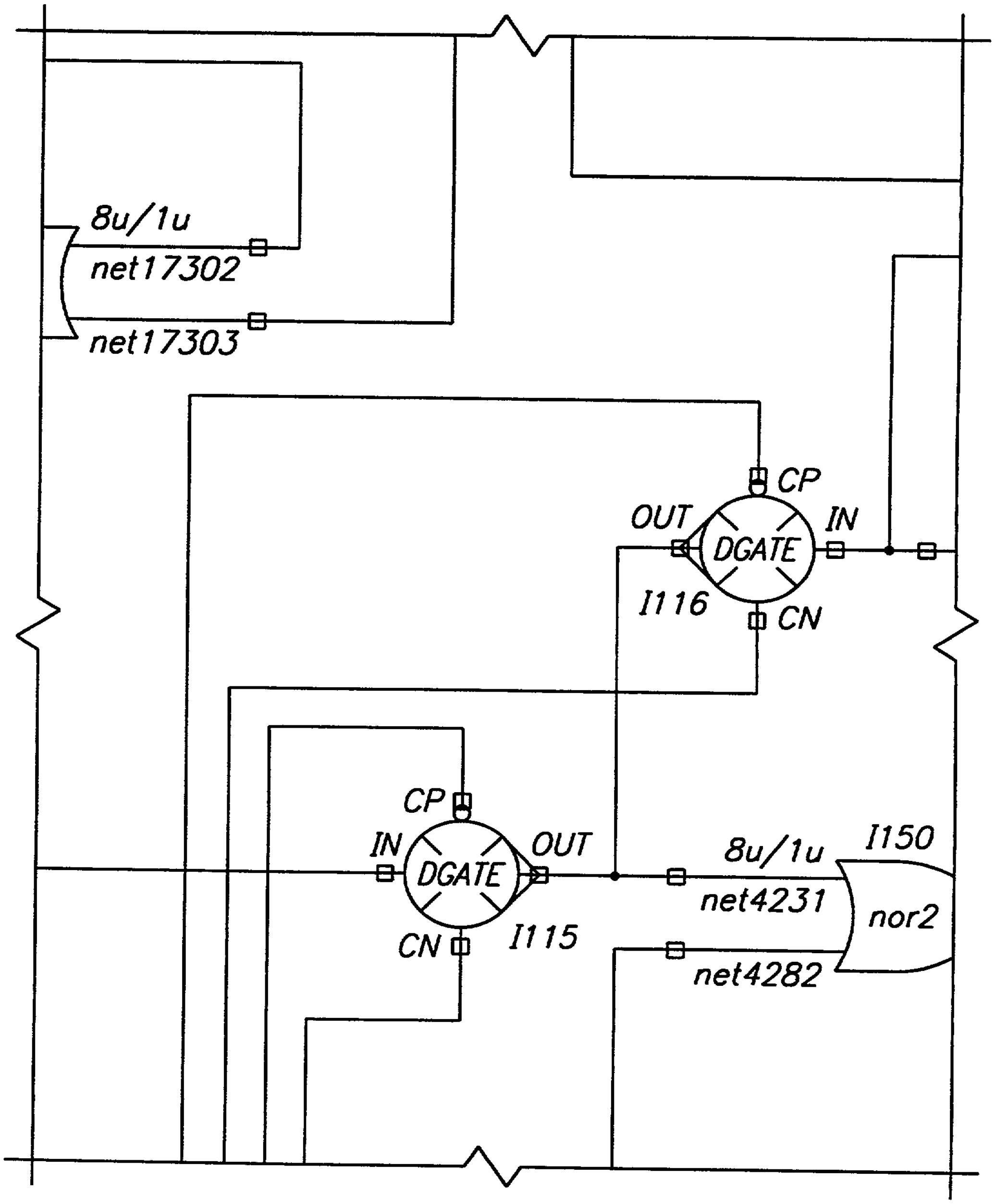

8u/1u
net17302
net17303
CP
OUT
IN
DGATE
I116
CN
CP
IN
DGATE
OUT
CN
I115
8u/1u
I150
net4231
nor2
net4282

Fig 10.06BC

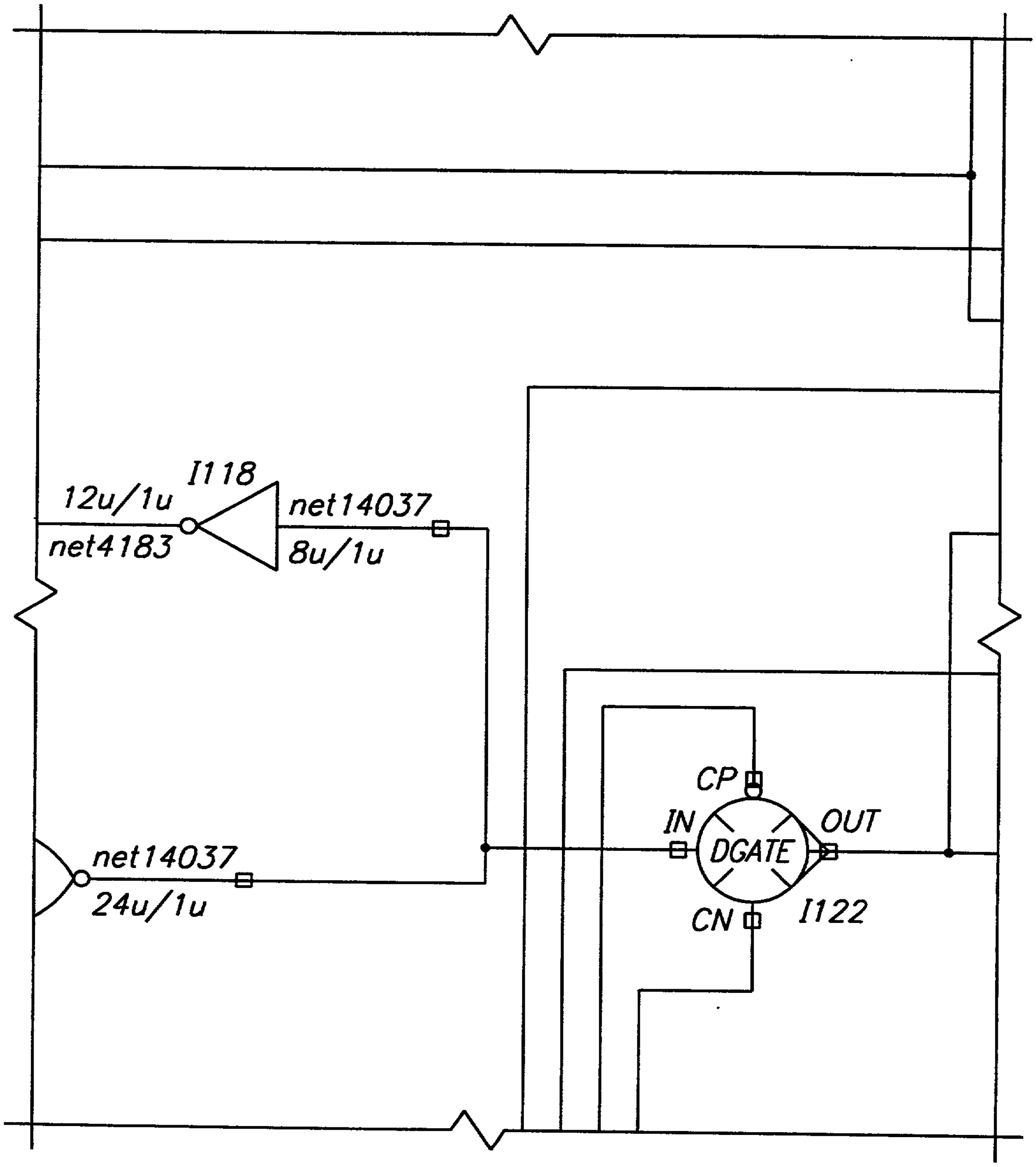

I118
12u/1u
net4183
net14037
8u/1u
net14037
24u/1u
CP
IN
DGATE
OUT
CN
I122

Fig 10.06BD

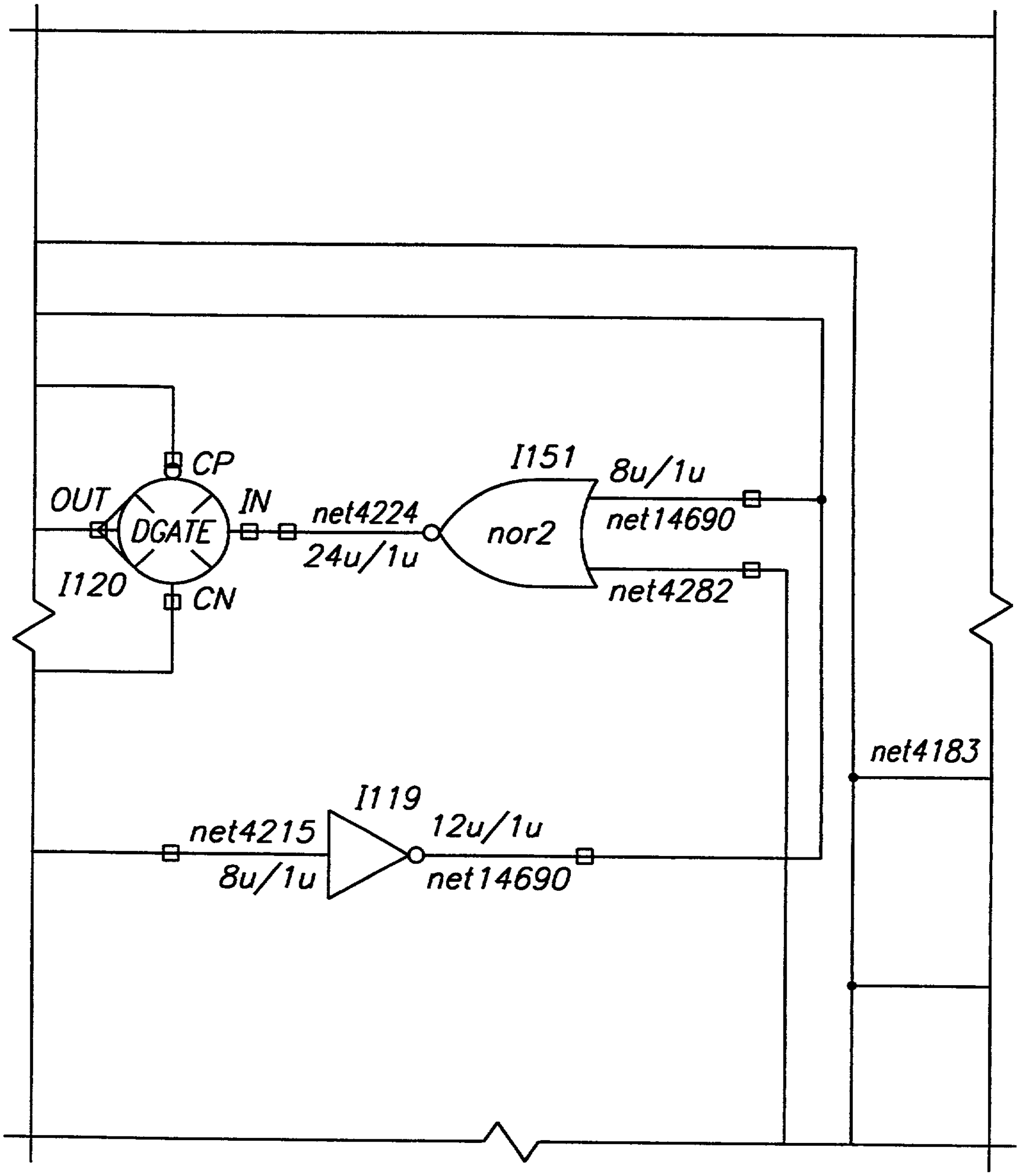

CP
OUT
DGATE
IN
I120
CN
net4224
24u/1u
I151
nor2
8u/1u
net14690
net4282
net4183
I119
net4215
8u/1u
12u/1u
net14690

Fig 10.06BE

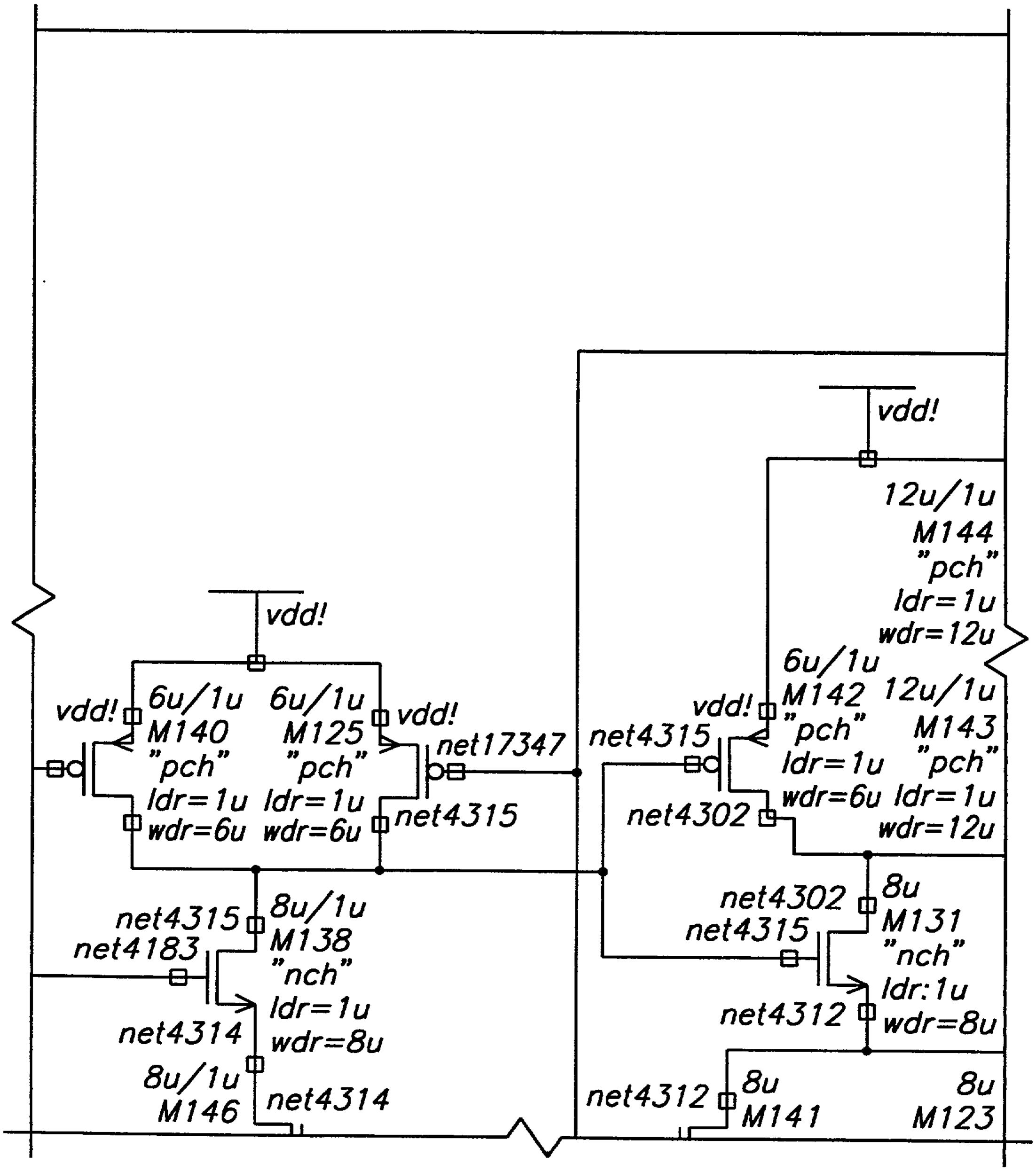

vdd!
6u/1u
M140
"pch"
ldr=1u
wdr=6u
6u/1u
M125
"pch"
ldr=1u
wdr=6u
vdd!
vdd!
net17347
net4315
net4315
8u/1u
M138
"nch"
ldr=1u
wdr=8u
net4183
net4314
8u/1u
M146
net4314
vdd!
12u/1u
M144
"pch"
ldr=1u
wdr=12u
6u/1u
M142
"pch"
ldr=1u
wdr=6u
vdd!
net4315
net4302
12u/1u
M143
"pch"
ldr=1u
wdr=12u
net4302
net4315
8u
M131
"nch"
ldr:1u
wdr=8u
net4312
net4312
8u
M141
8u
M123

Fig 10.06BF

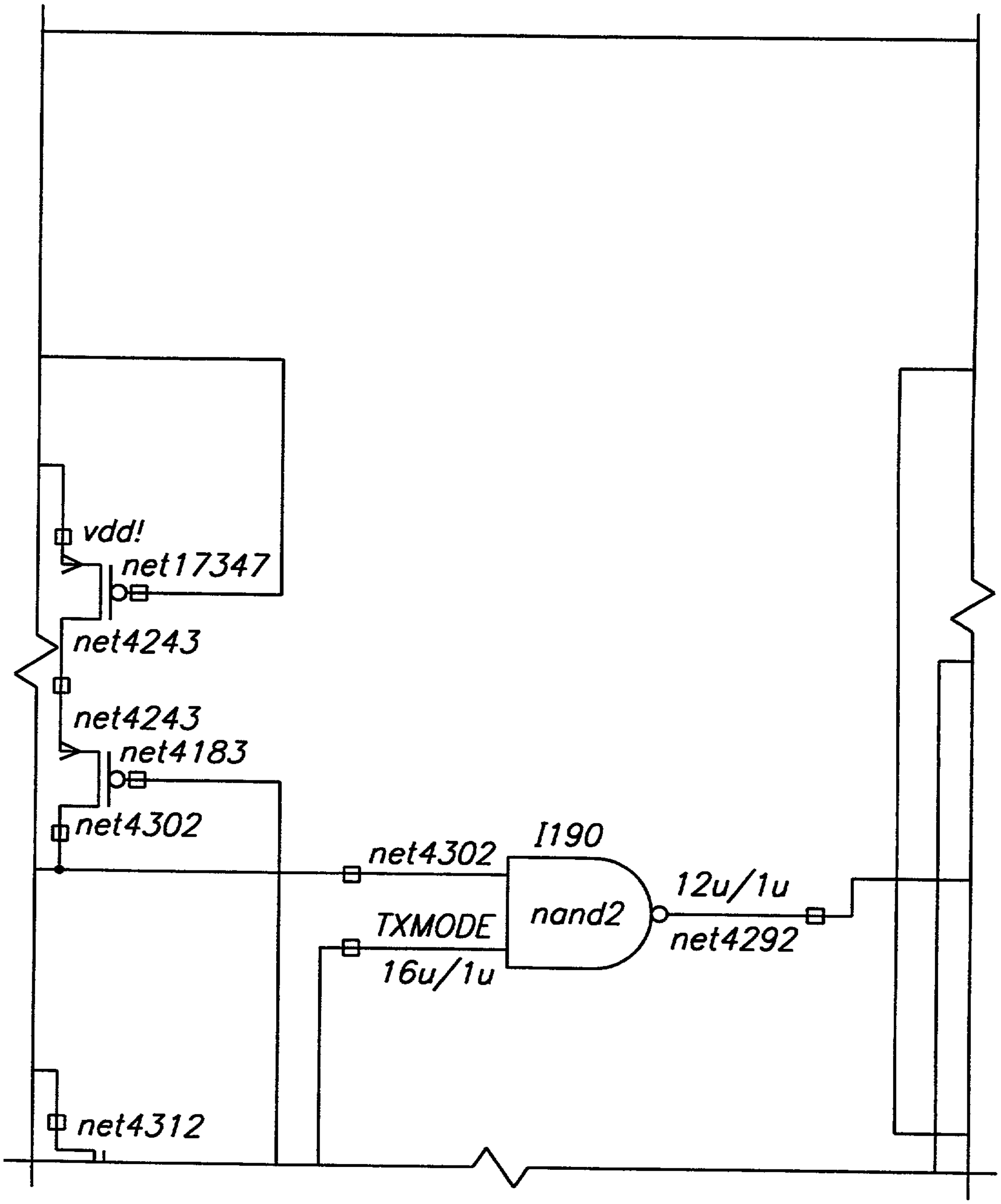

vdd!
net17347
net4243
net4243
net4183
net4302
net4302
I190
nand2
12u/1u
net4292
TXMODE
16u/1u
net4312

Fig 10.06BG

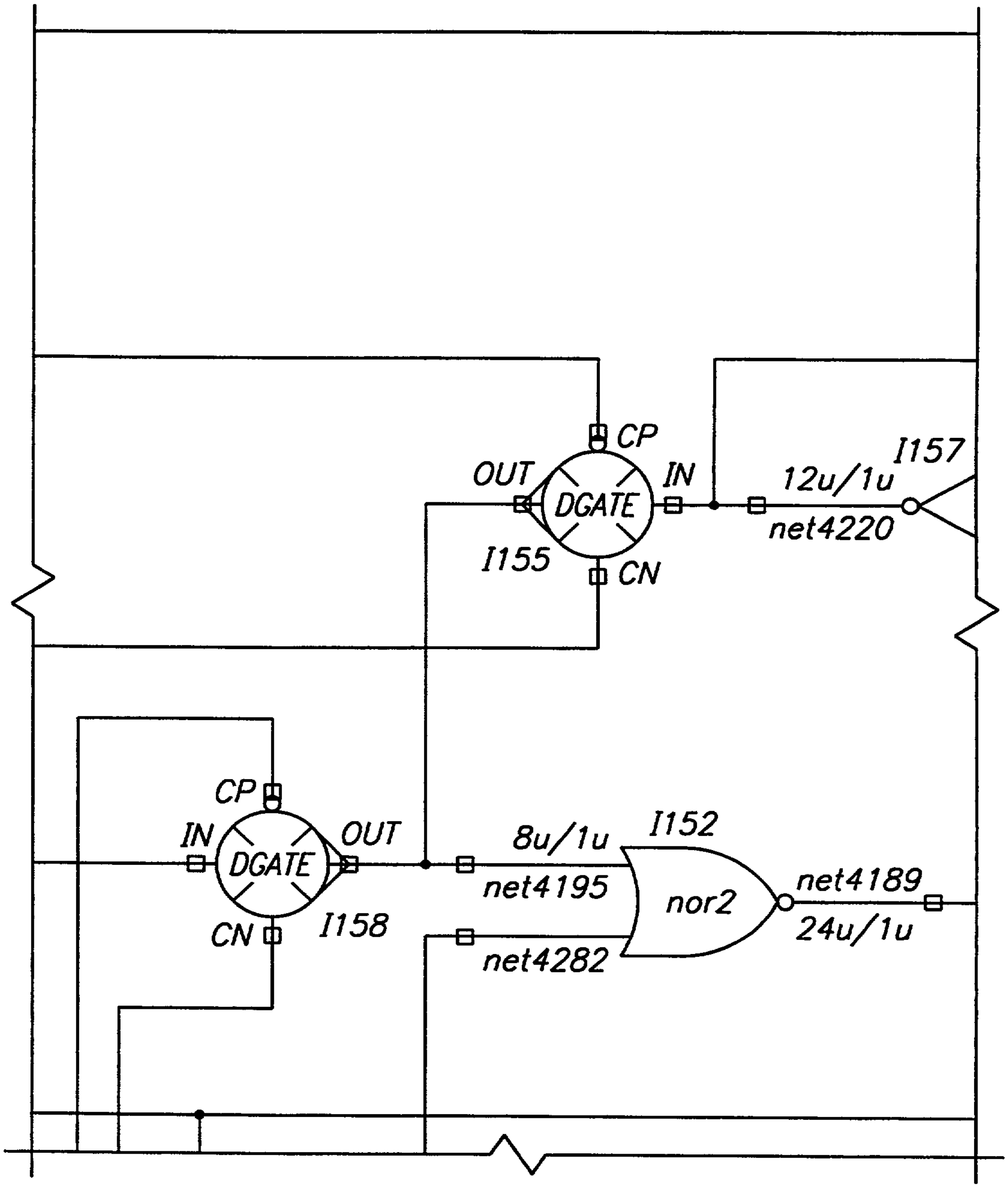

CP
OUT
IN
DGATE
I155
CN
I157
12u/1u
net4220
CP
IN
DGATE
OUT
CN
I158
8u/1u
net4195
I152
nor2
net4282
net4189
24u/1u

Fig 10.06BH

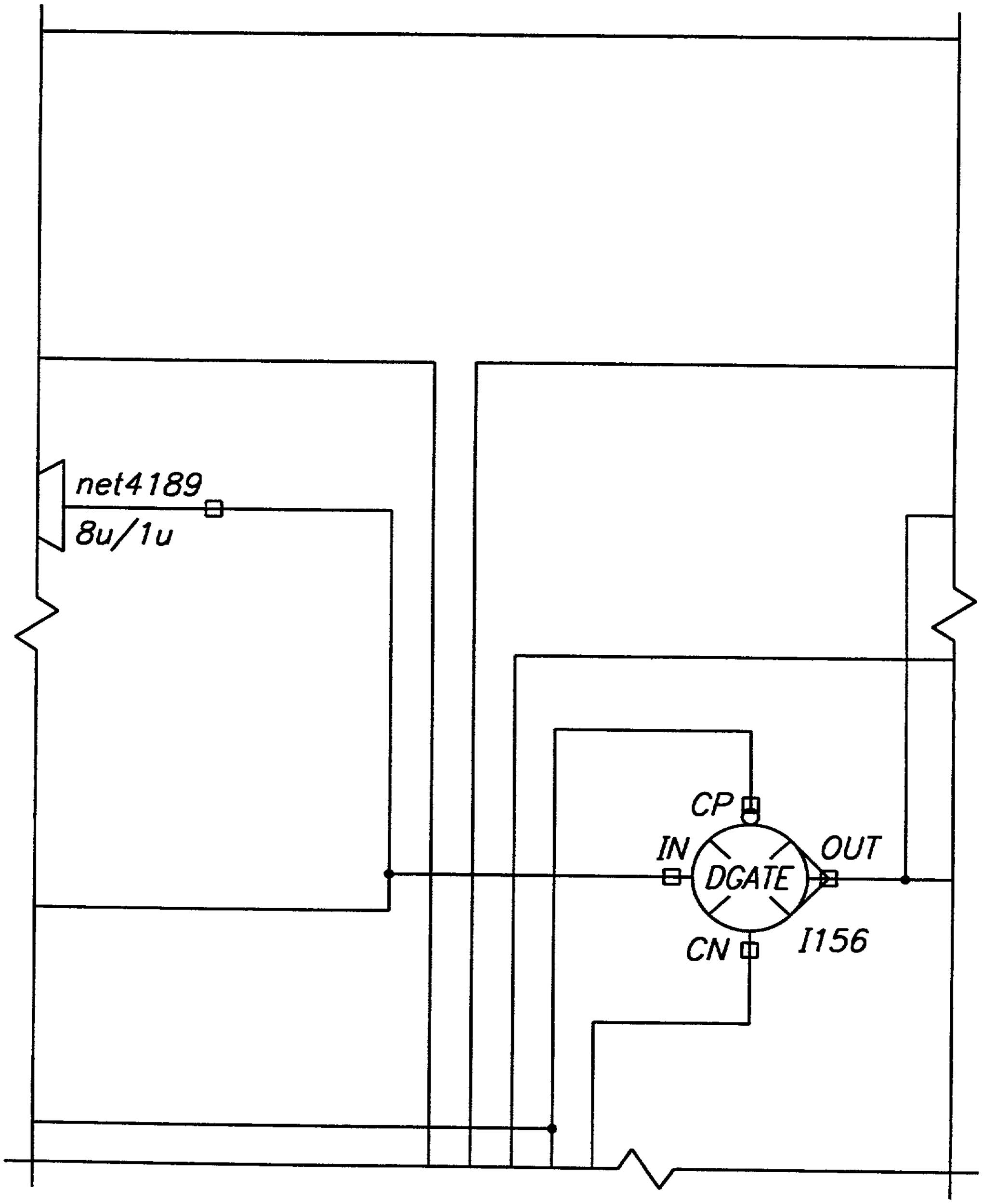


Fig 10.06BI

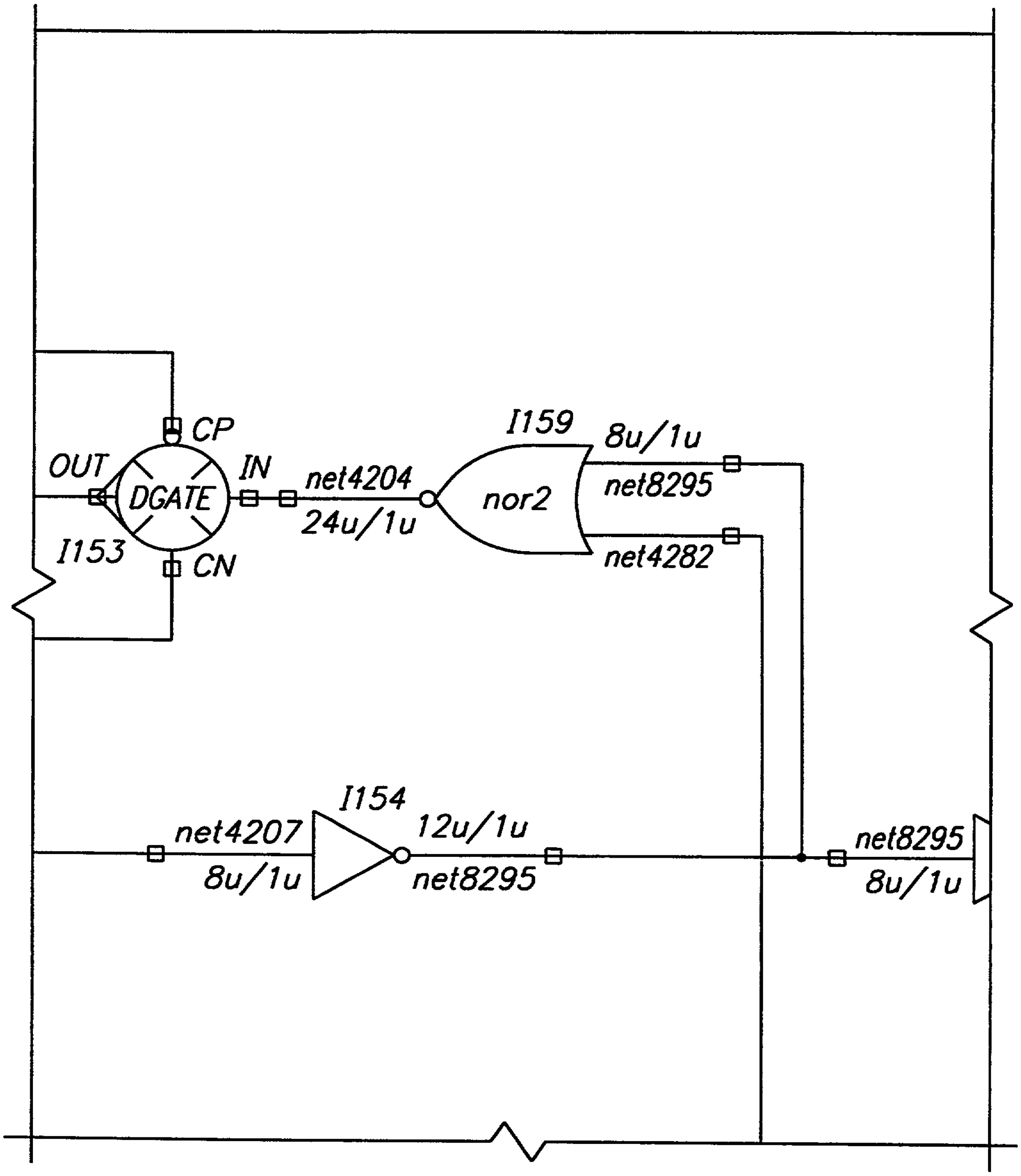

CP
OUT
DGATE
IN
I153
CN
net4204
24u/1u
I159
nor2
8u/1u
net8295
net4282
I154
net4207
8u/1u
12u/1u
net8295
net8295
8u/1u

Fig 10.06BJ

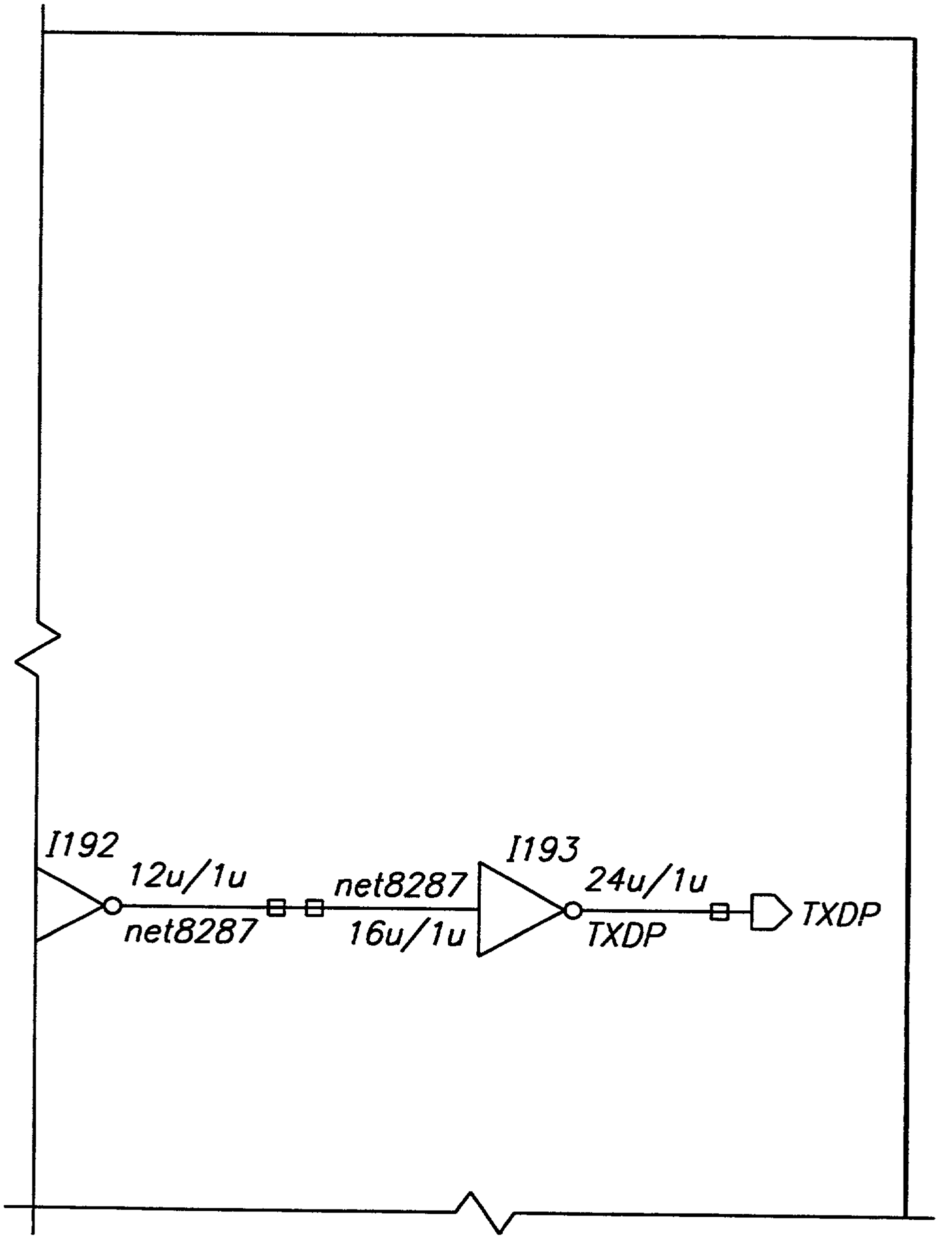


Fig 10.06BK

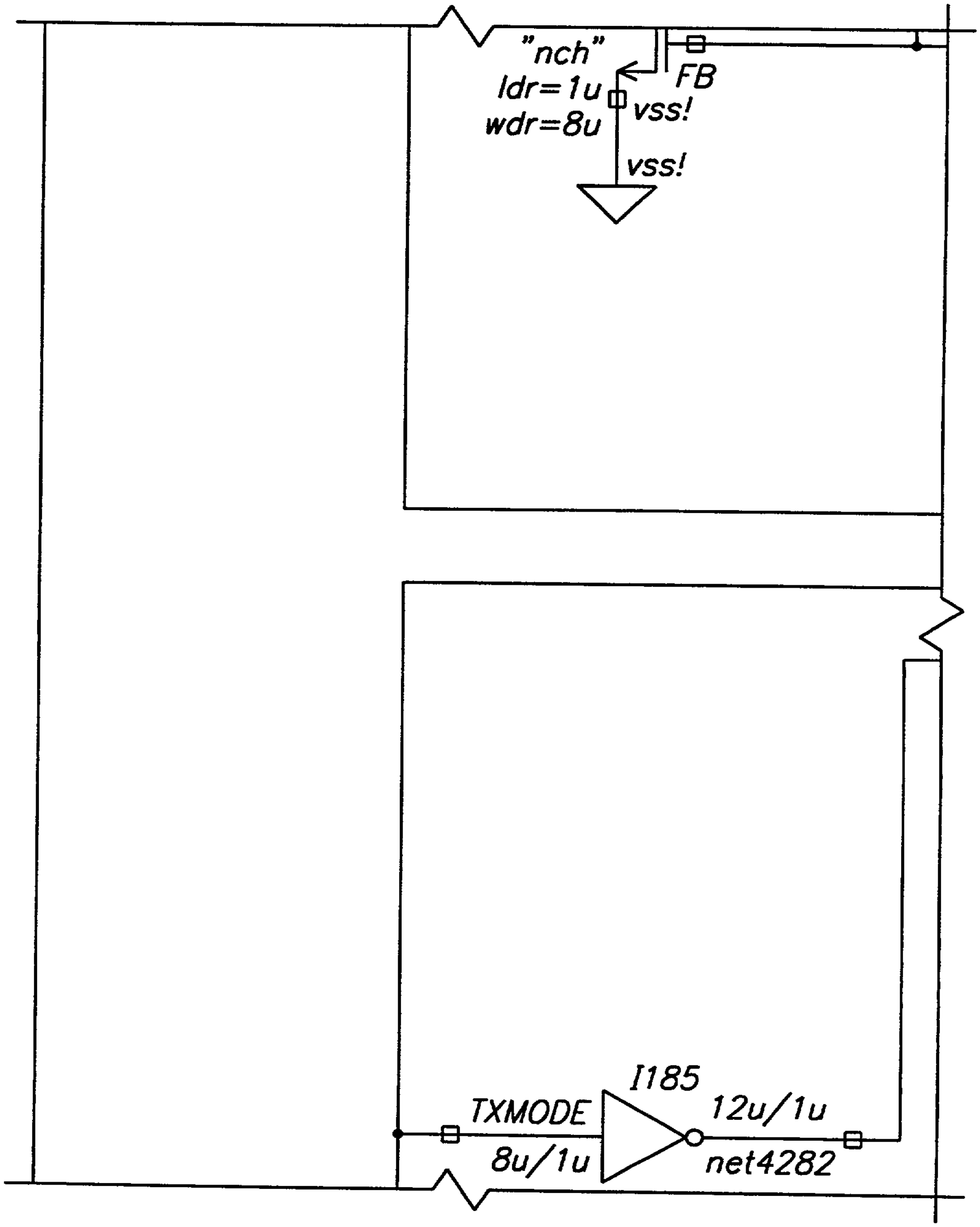


Fig 10.06CA

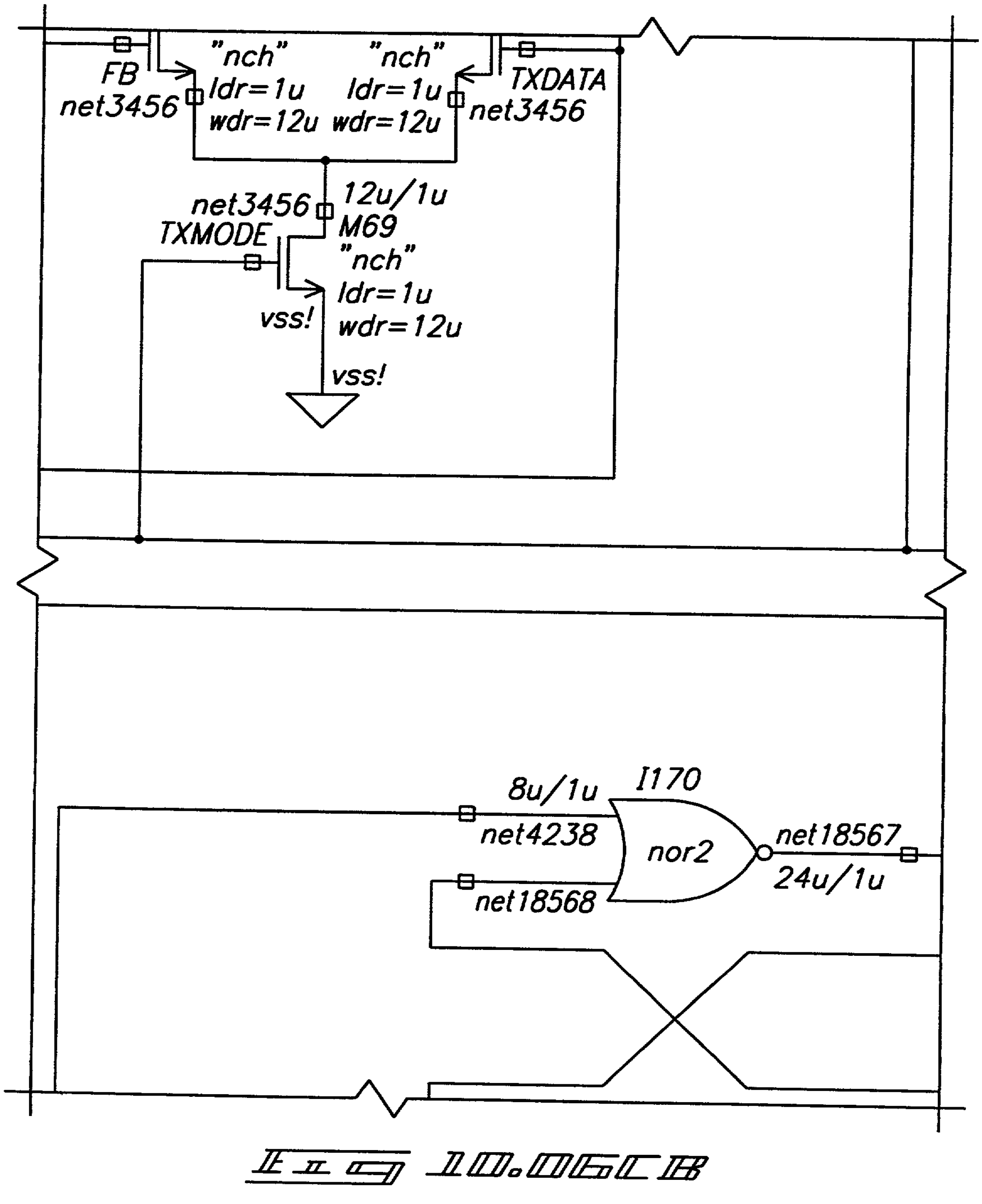

FB
net3456
"nch"
ldr=1u
wdr=12u
"nch"
ldr=1u
wdr=12u
TXDATA
net3456
net3456
12u/1u
M69
TXMODE
"nch"
ldr=1u
wdr=12u
vss!
vss!
8u/1u
I170
net4238
nor2
net18567
24u/1u
net18568

Fig 10.06CB

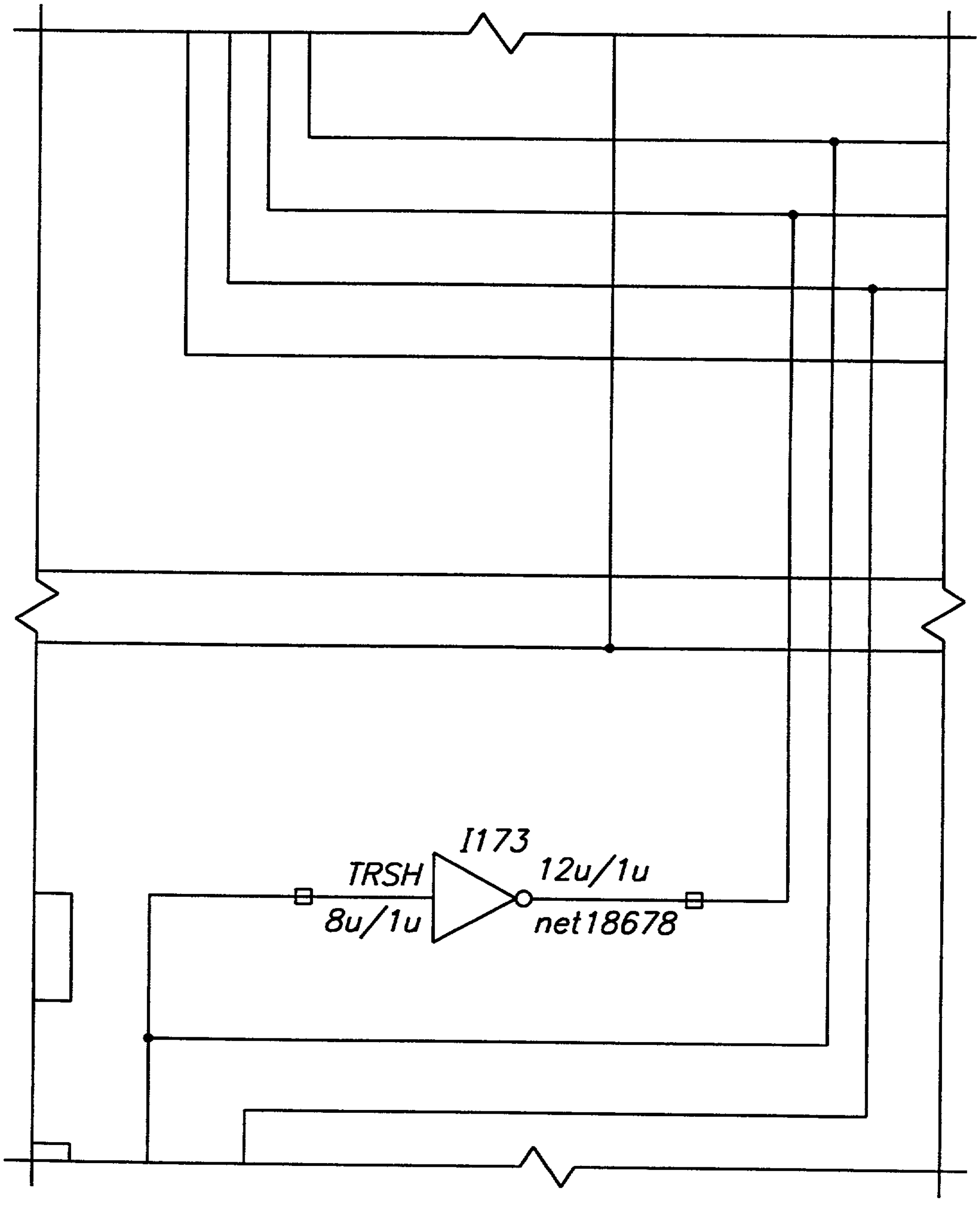


Fig 10.06CC

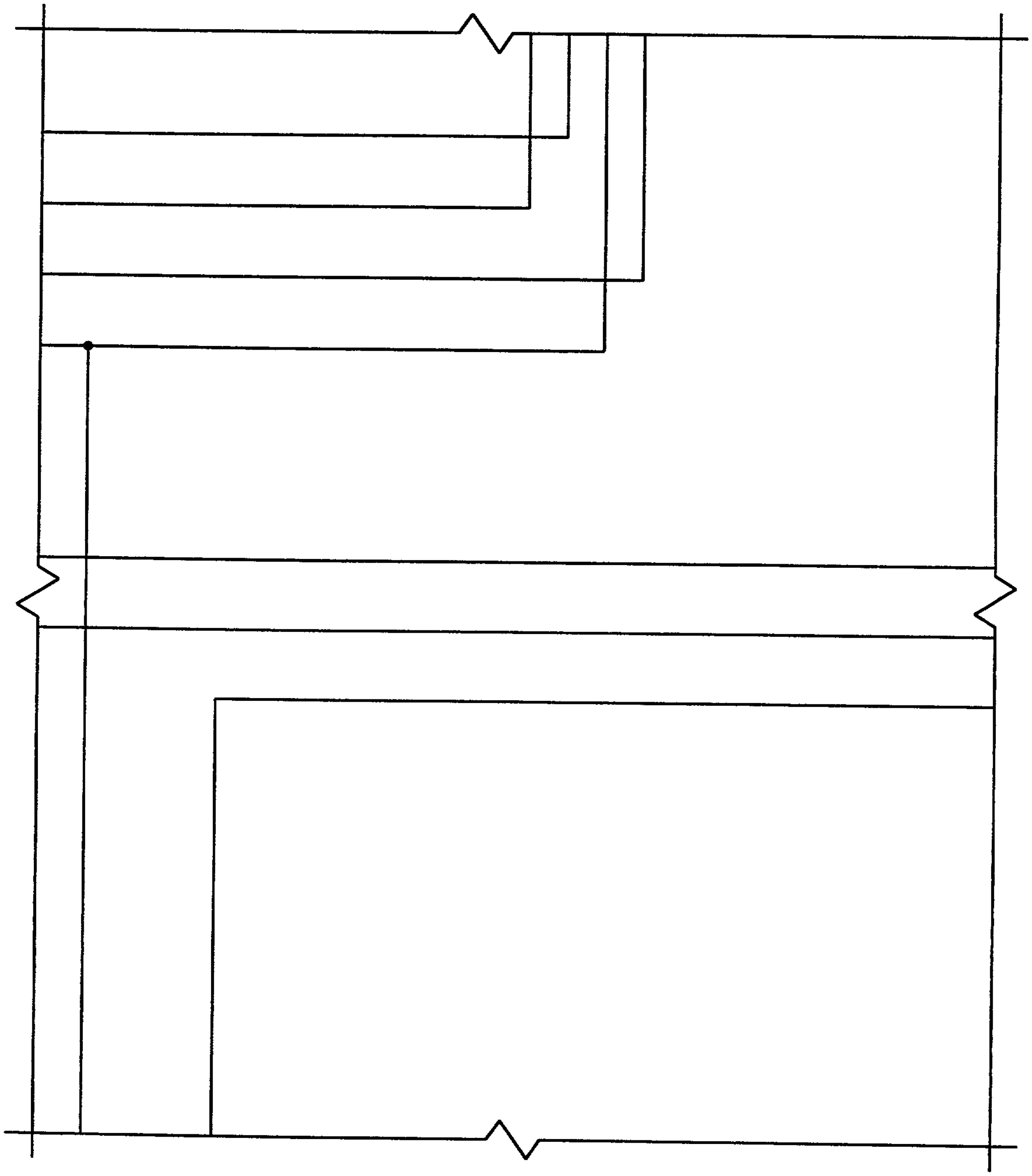


Fig 10.06CD

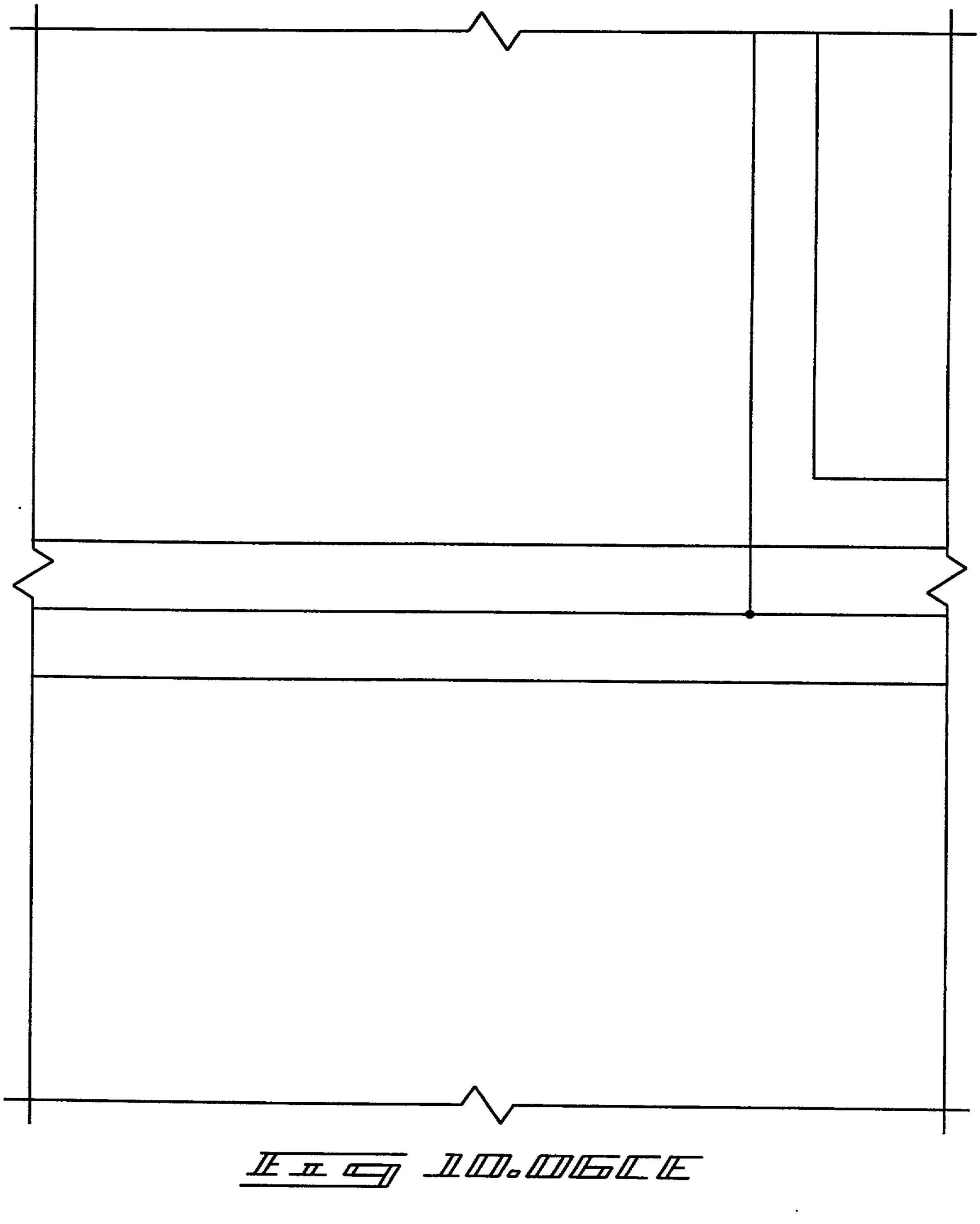


Fig 10.06CE

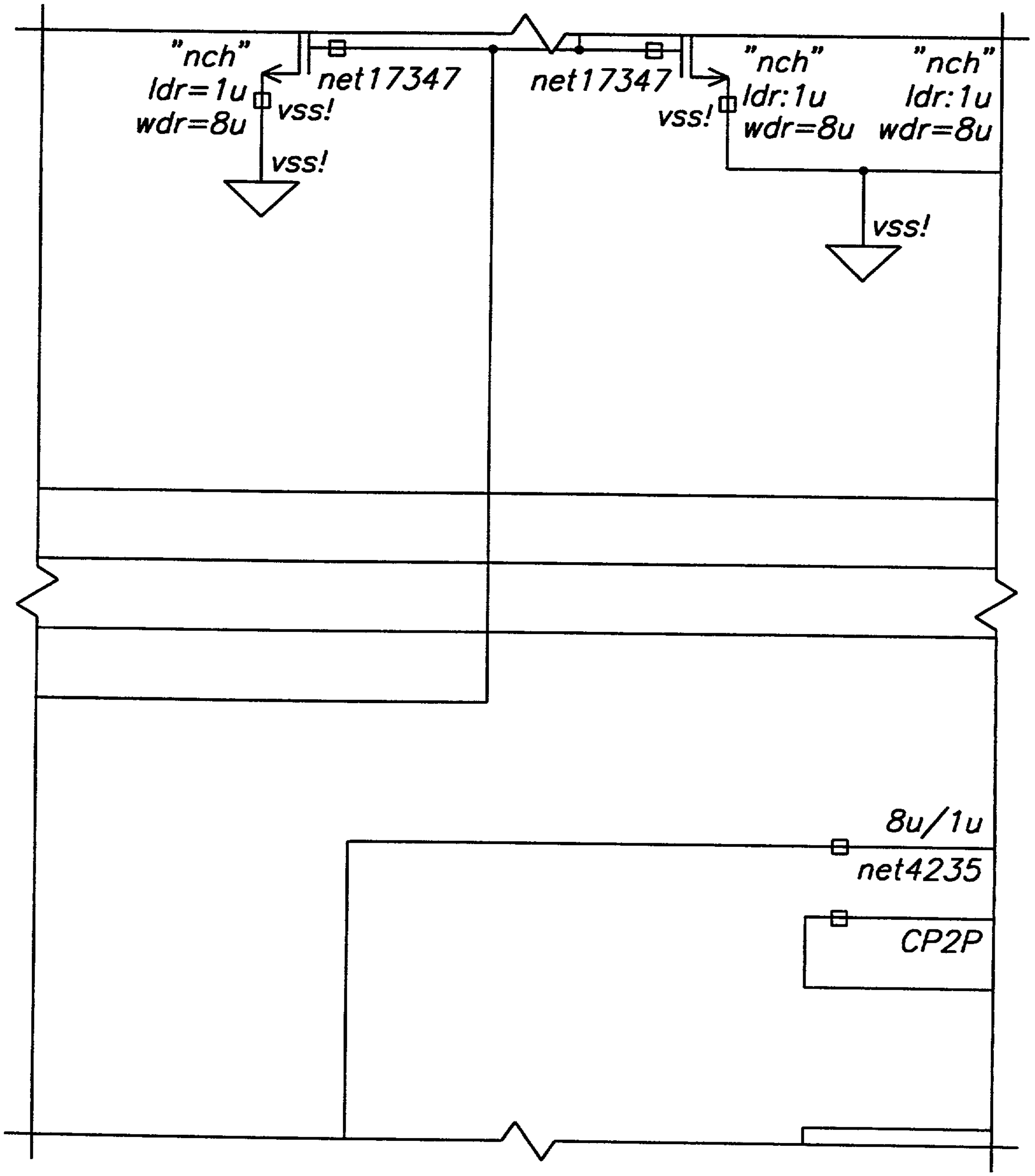

"nch"
ldr=1u
wdr=8u
vss!
net17347
vss!
net17347
vss!
"nch"
ldr:1u
wdr=8u
"nch"
ldr:1u
wdr=8u
vss!
8u/1u
net4235
CP2P

Fig 10.06CF

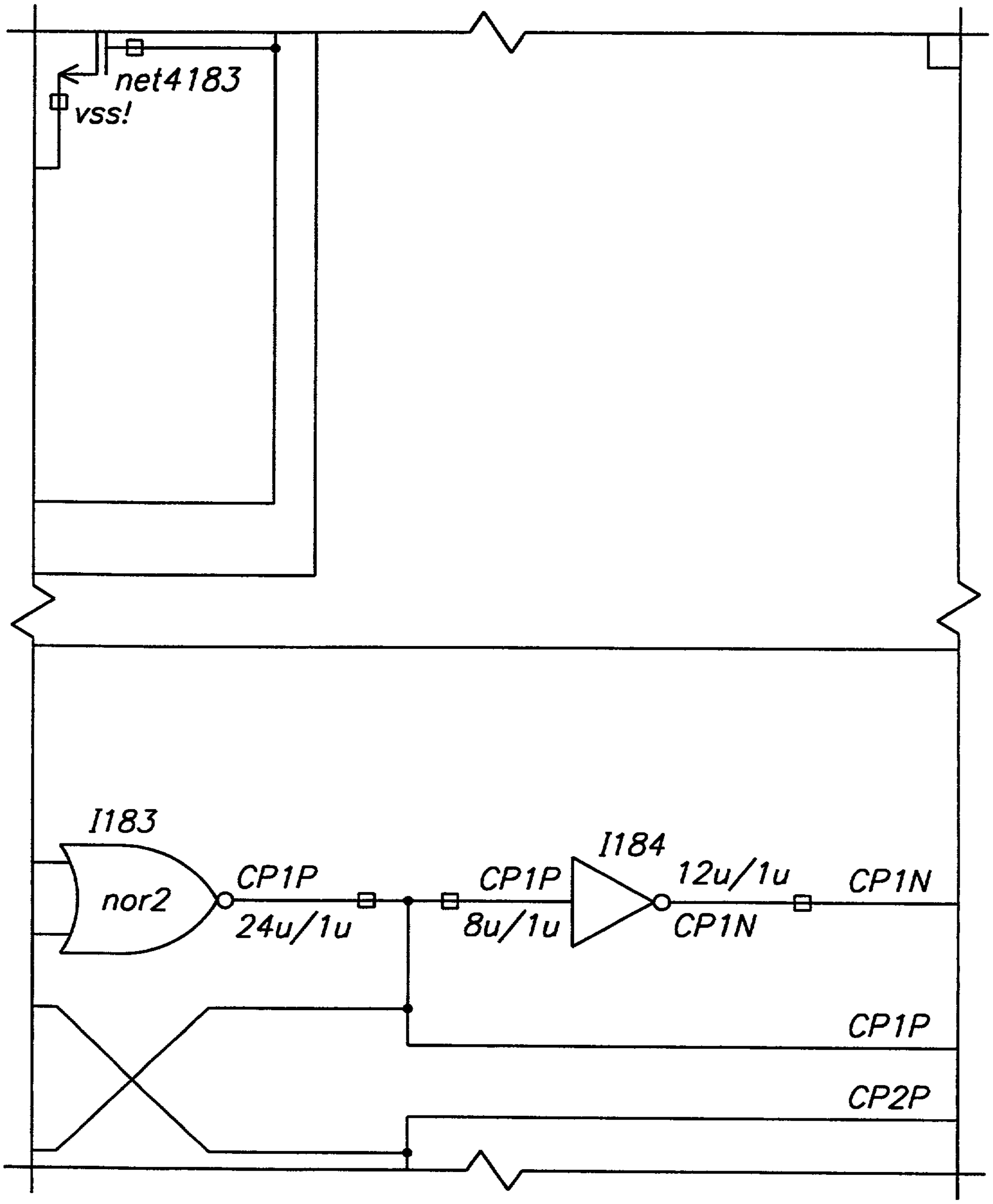

net4183
vss!
I183
nor2
CP1P
24u/1u
CP1P
8u/1u
I184
12u/1u
CP1N
CP1N
CP1P
CP2P

Fig 10.06CG

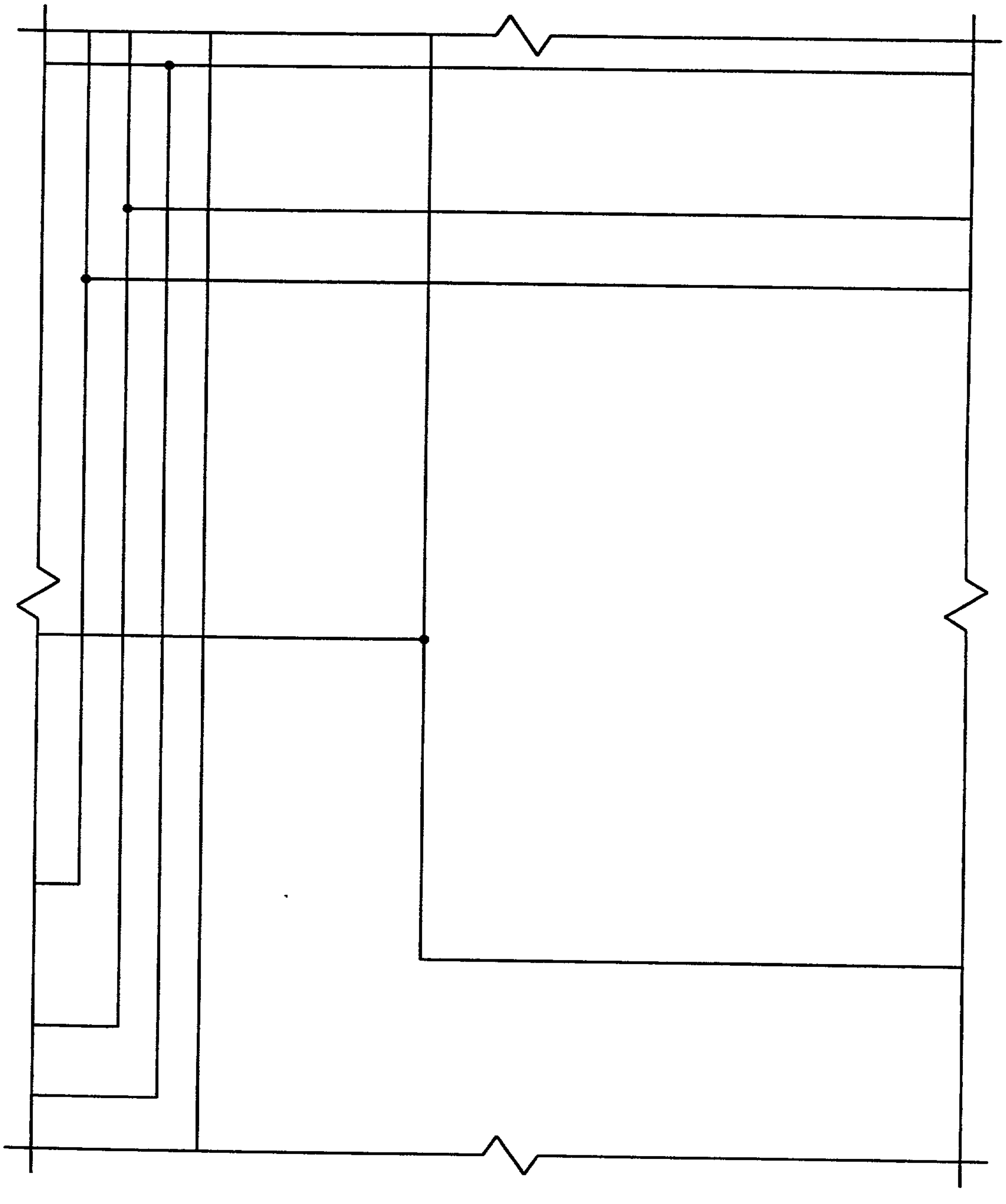


Fig 10.06CH

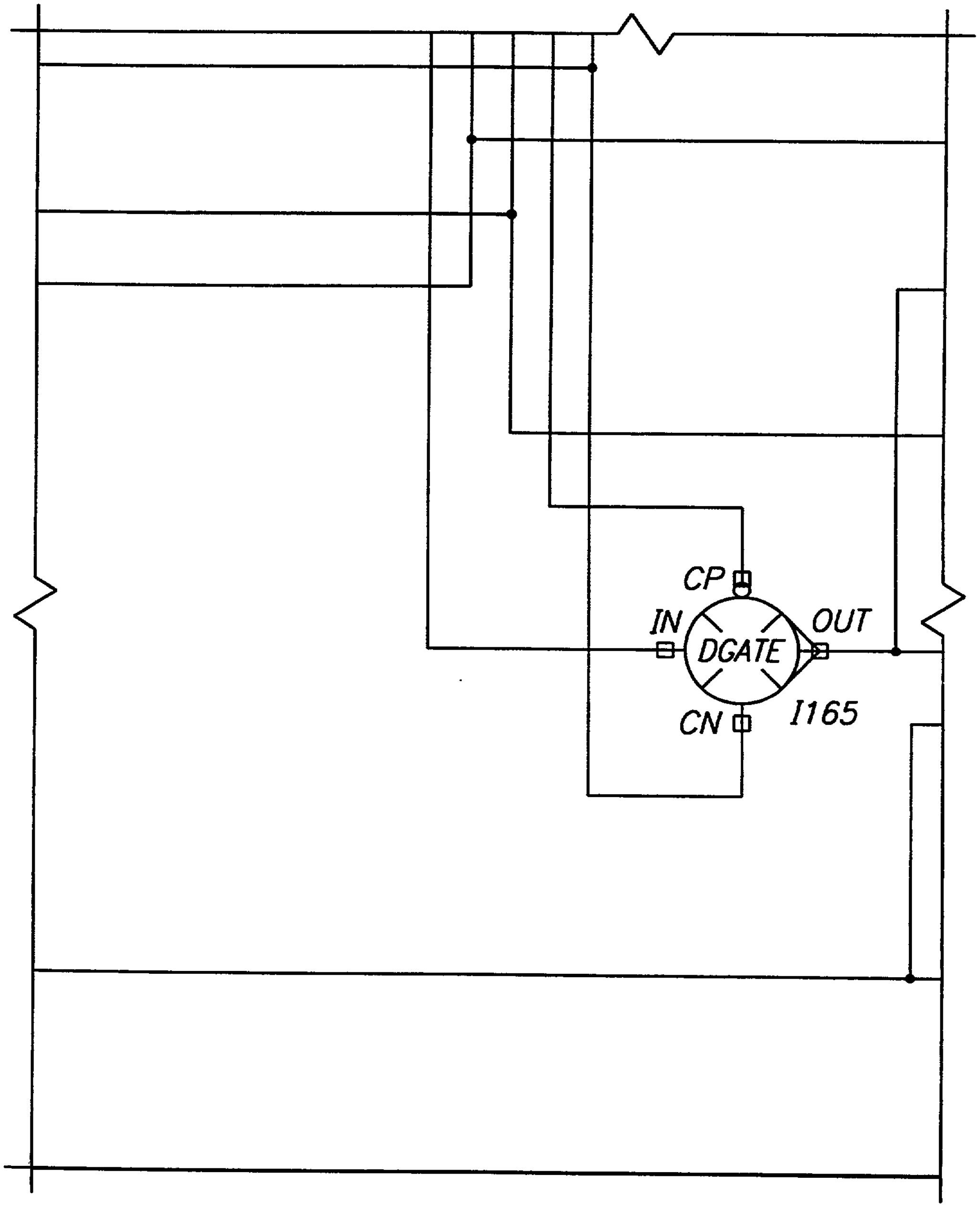


Fig 10.06CI

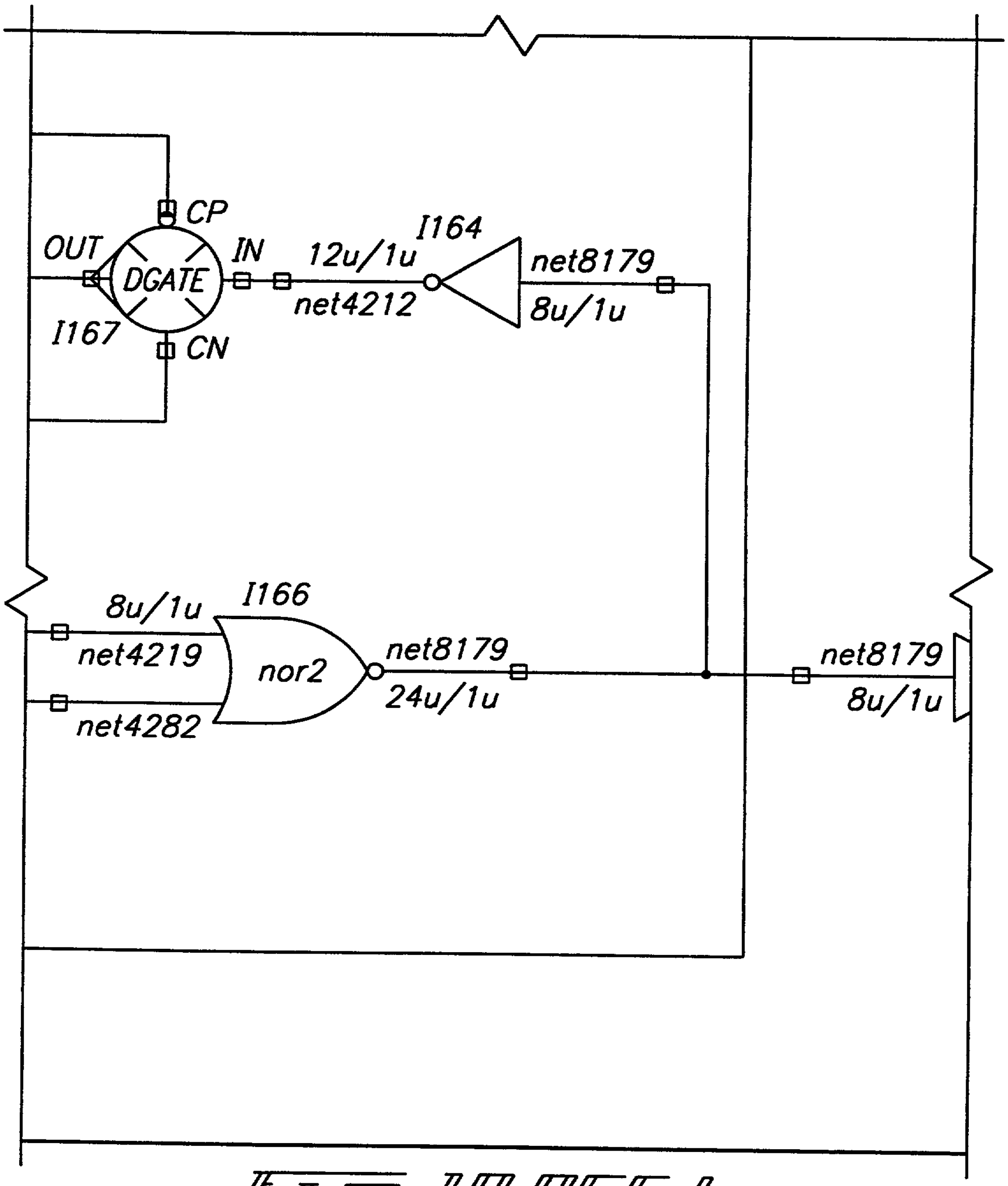

CP
OUT
DGATE
IN
12u/1u
I164
net8179
I167
net4212
8u/1u
CN
8u/1u
I166
net4219
nor2
net8179
net4282
24u/1u
net8179
8u/1u

Fig 10.06C.1

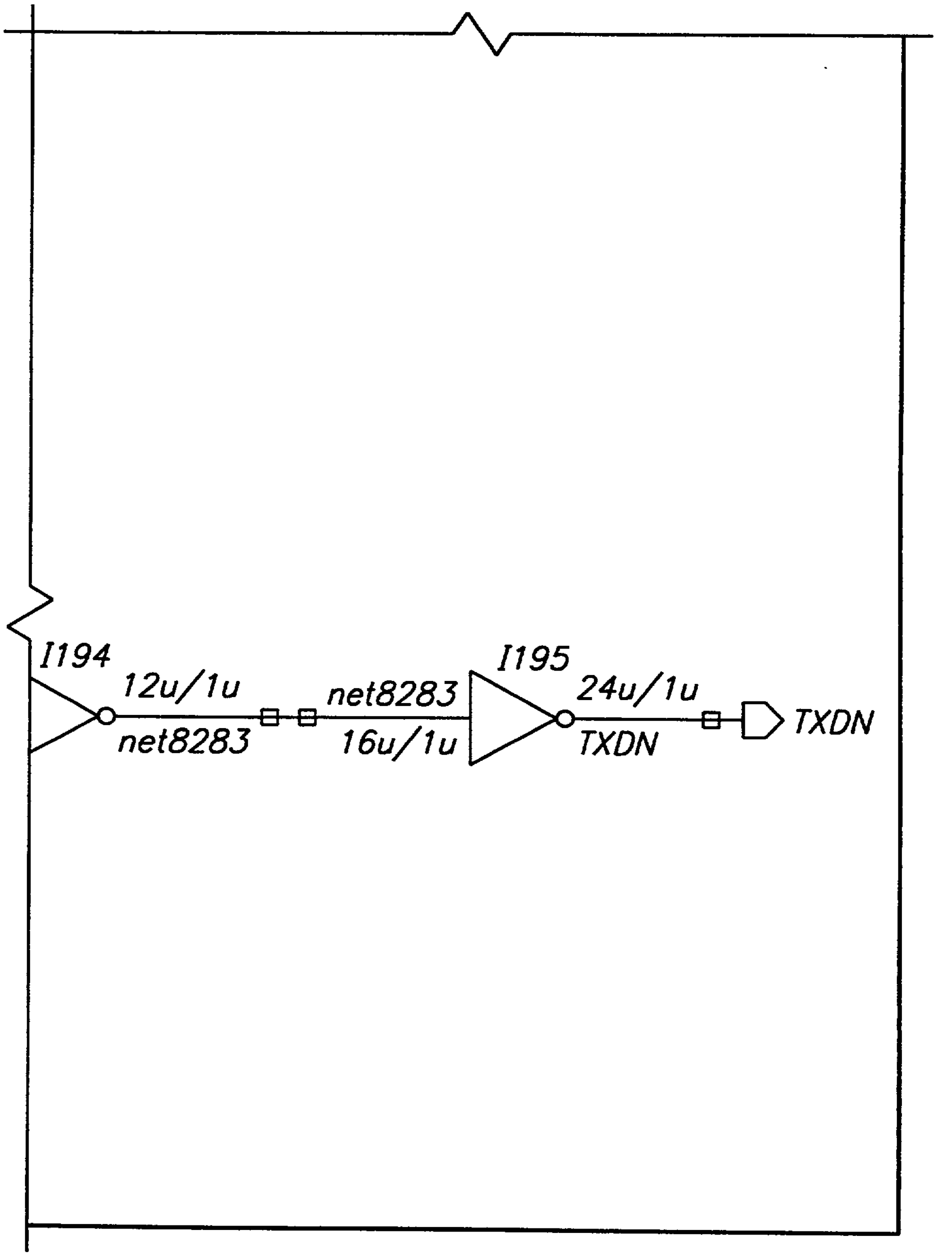
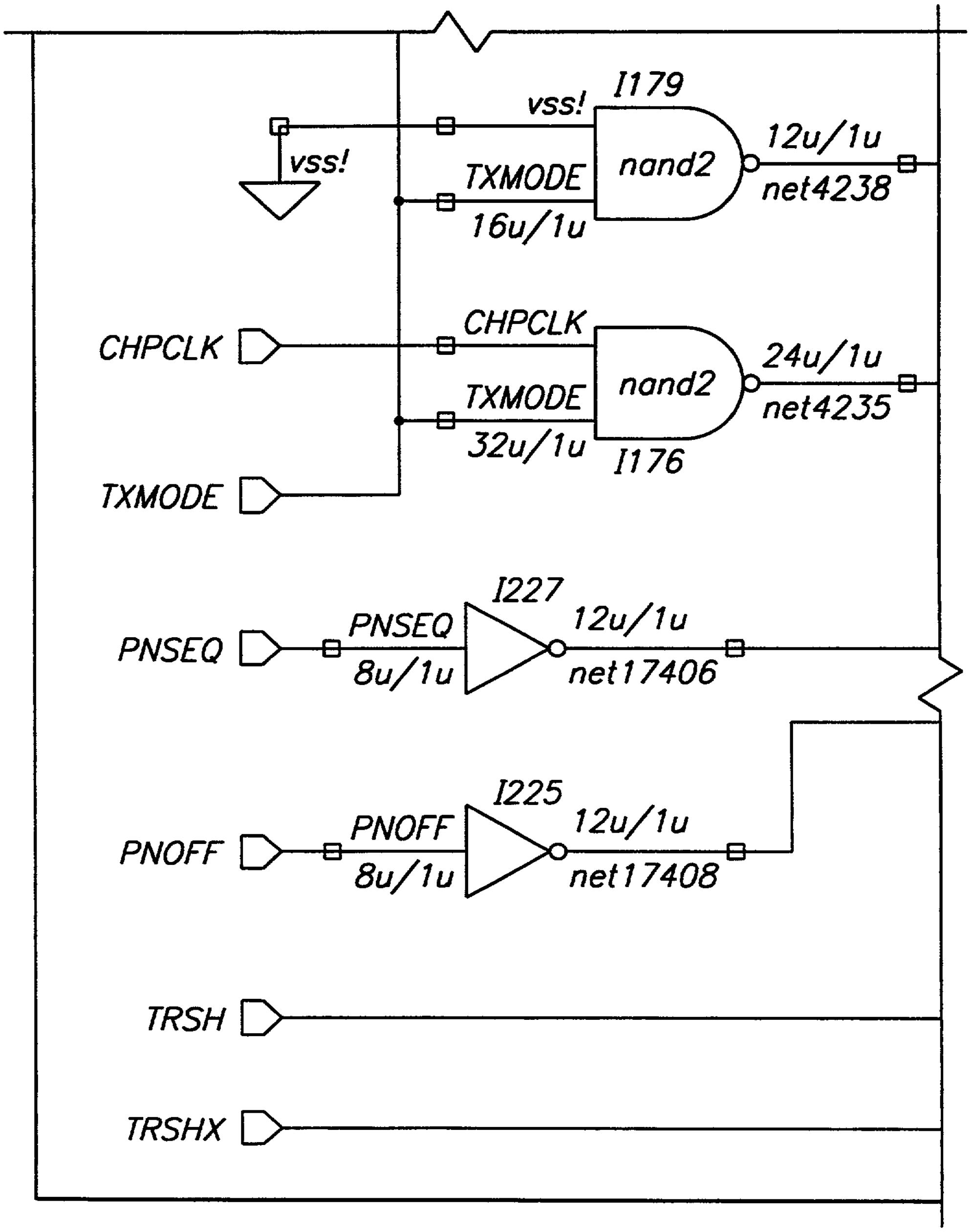


Fig 10.06CK



vss!
I179
nand2
12u/1u
net4238
vss!
TXMODE
16u/1u
CHPCLK
CHPCLK
nand2
24u/1u
net4235
TXMODE
32u/1u
I176
TXMODE
PNSEQ
I227
PNSEQ
8u/1u
12u/1u
net17406
PNOFF
I225
PNOFF
8u/1u
12u/1u
net17408
TRSH
TRSHX

Fig 10.06DA

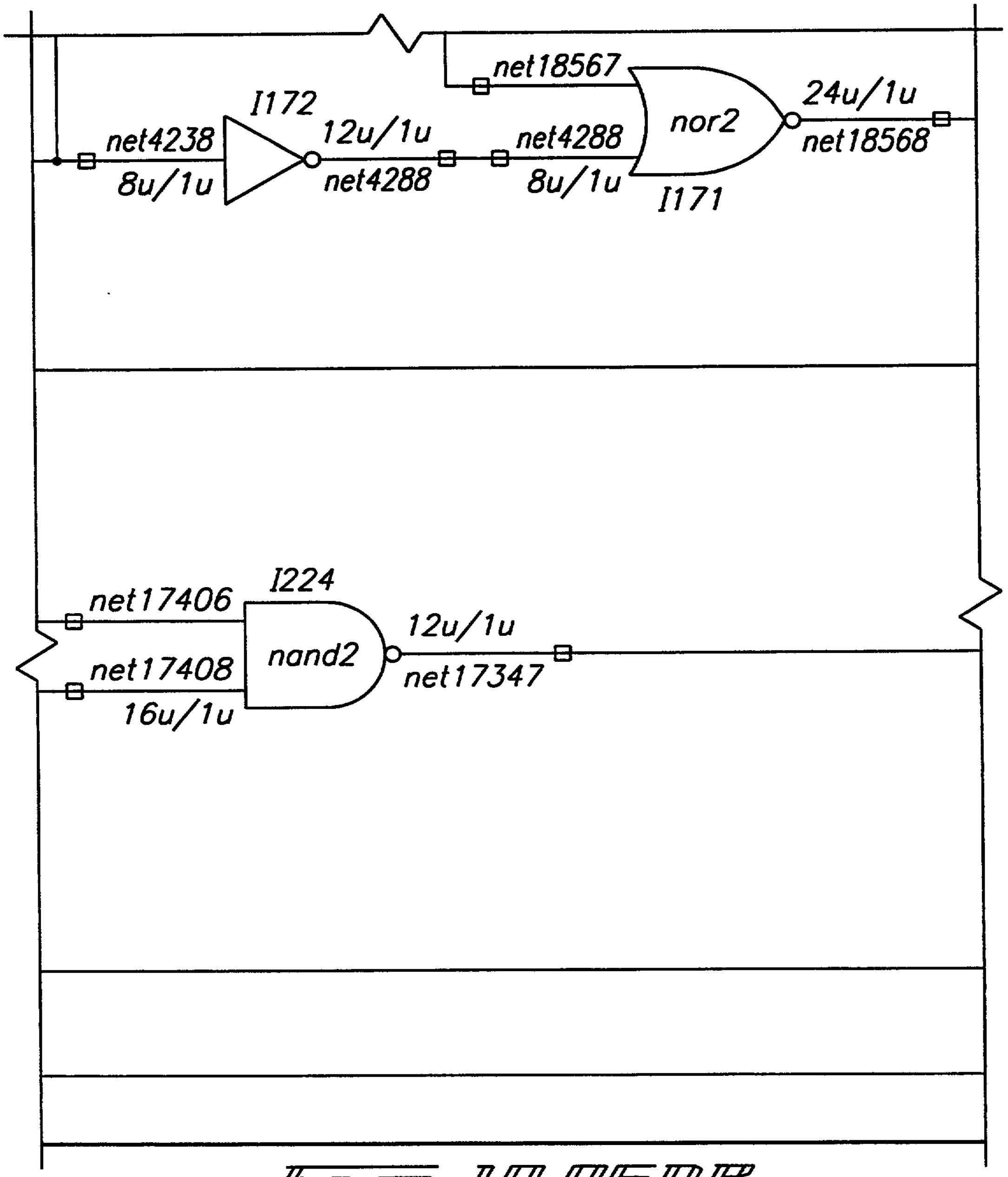

net18567
I172
net4238
8u/1u
12u/1u
net4288
net4288
8u/1u
nor2
I171
24u/1u
net18568
I224
net17406
net17408
16u/1u
nand2
12u/1u
net17347

Fig 10.06DB

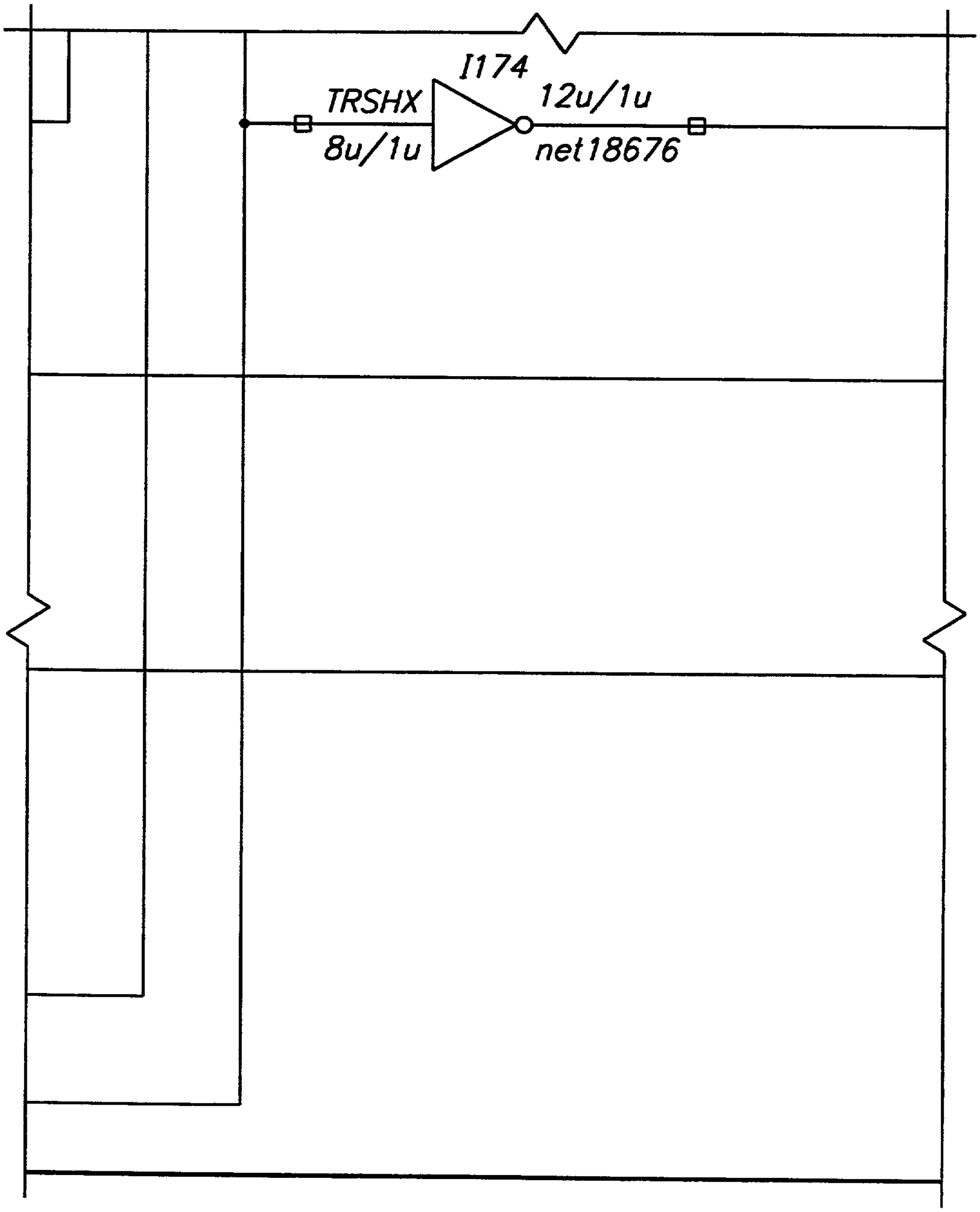


Fig 10.06DC

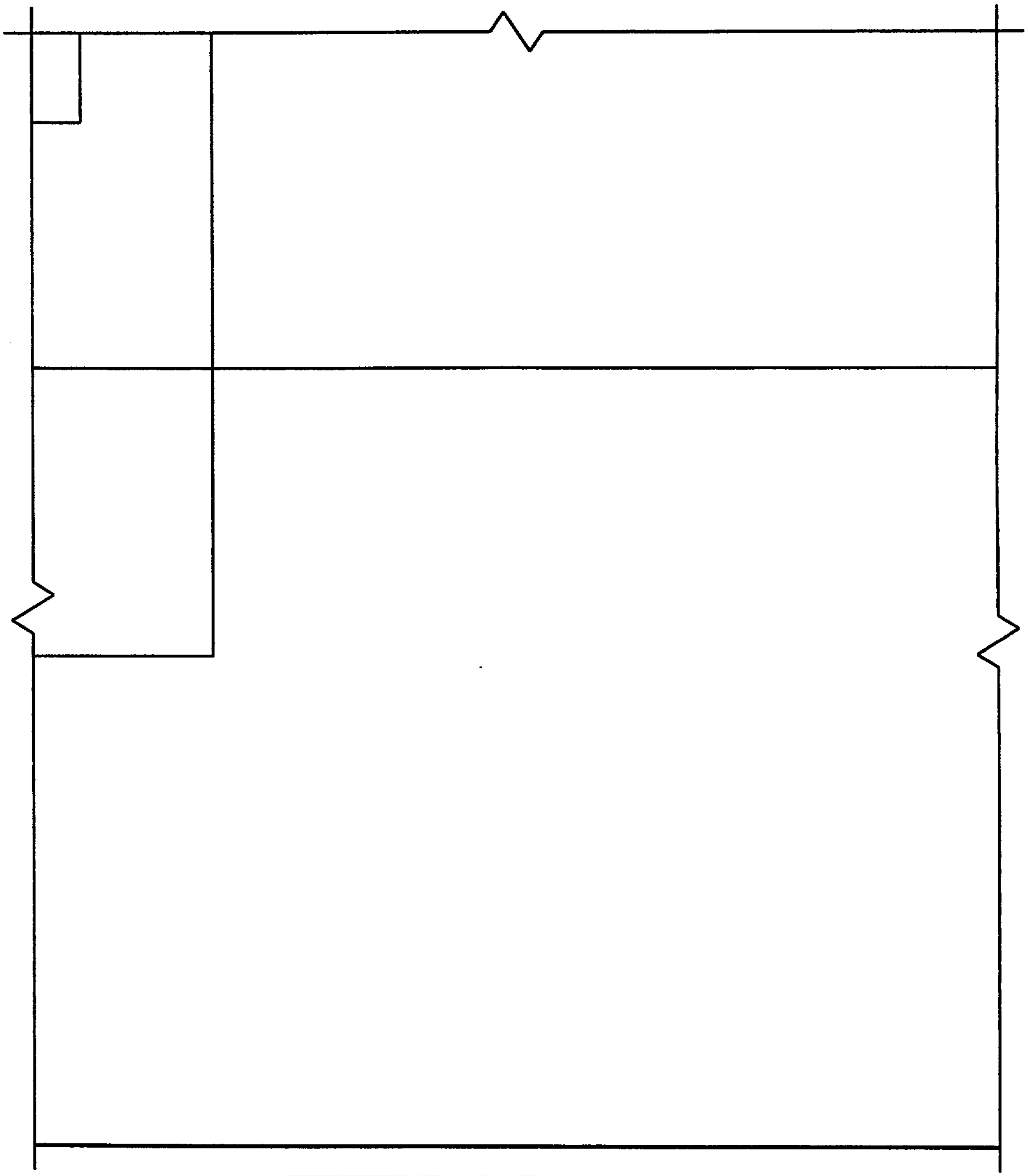


Fig 10.06DD

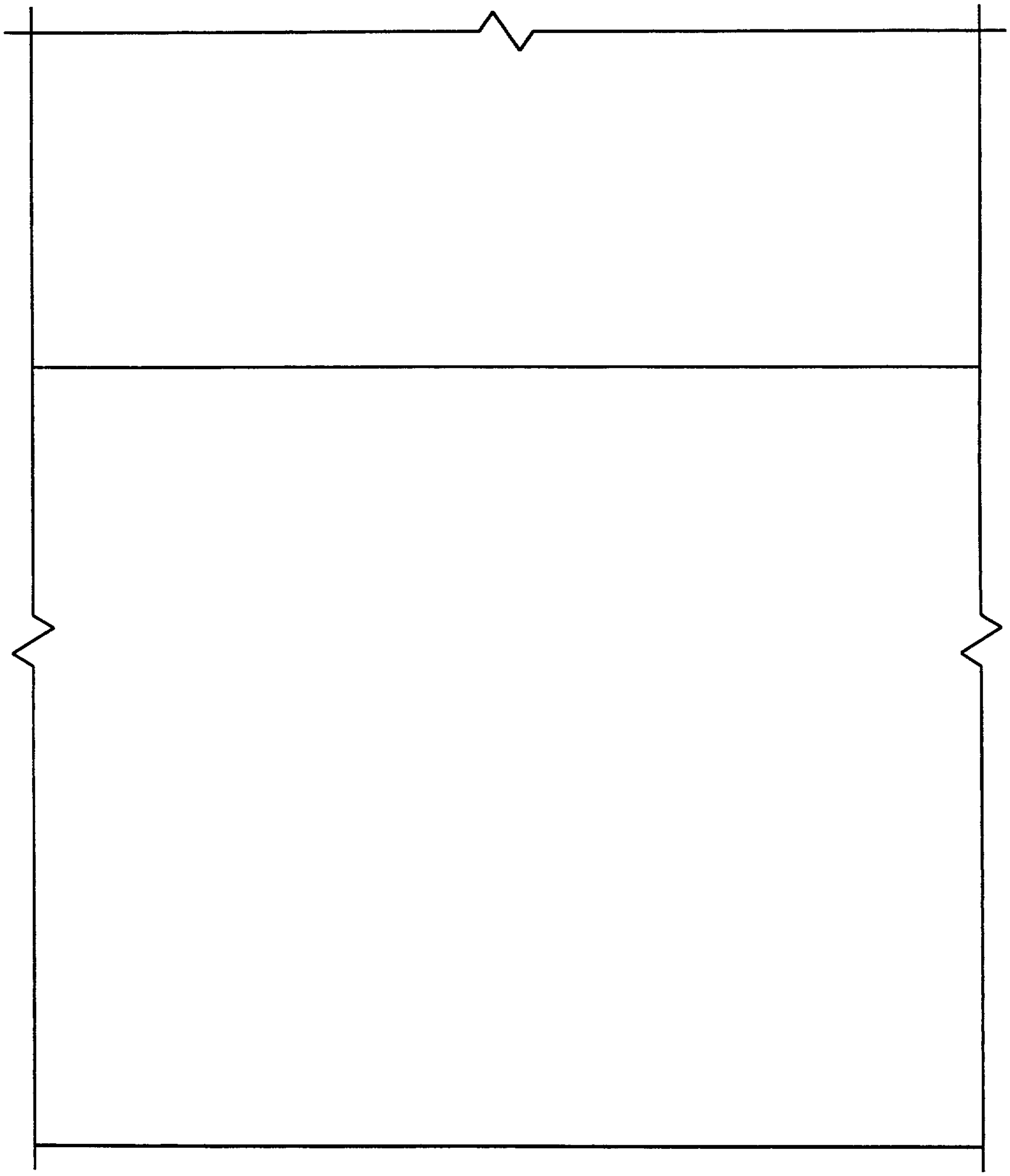


Fig 10.06DE

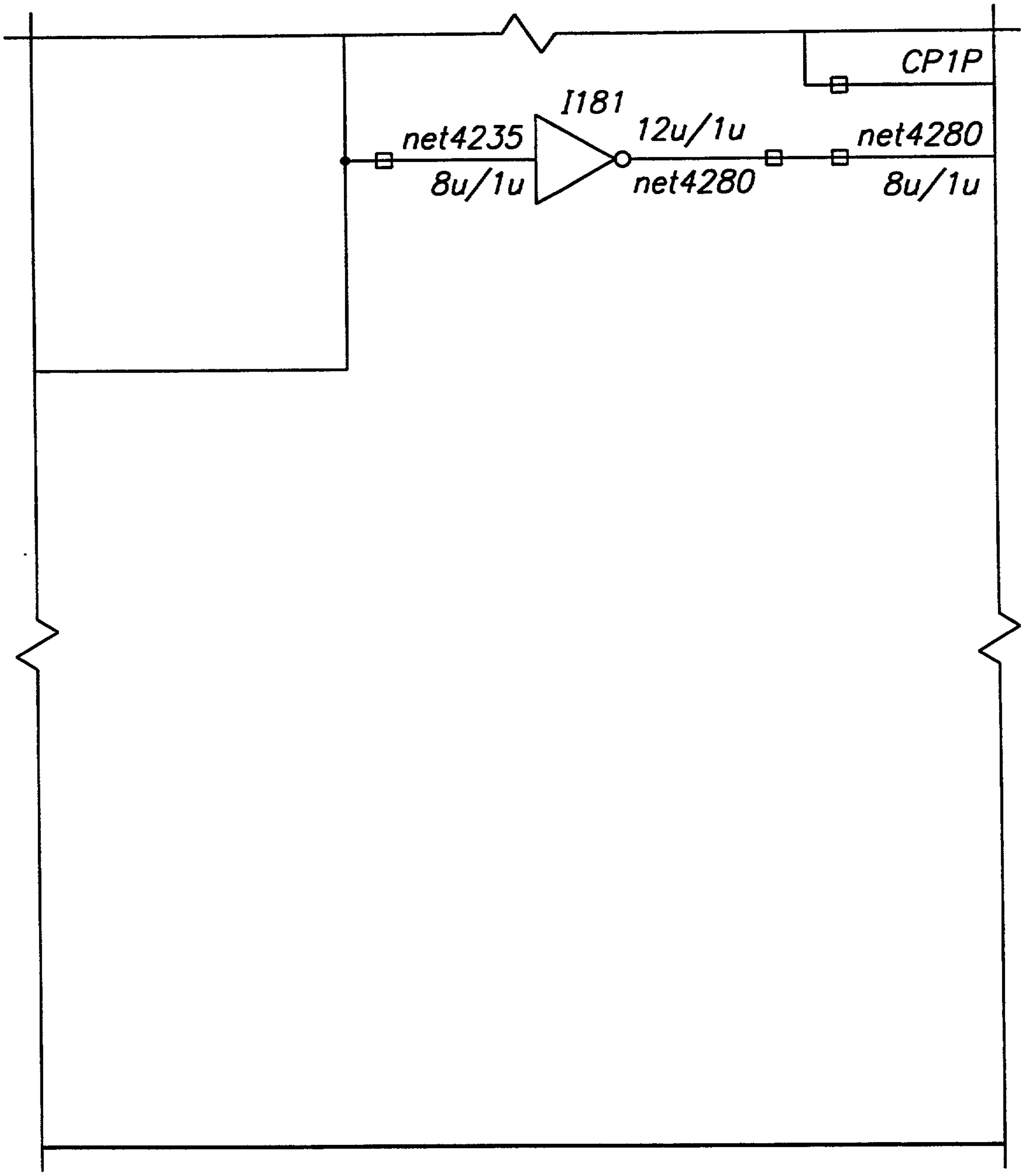


Fig 10.06DF

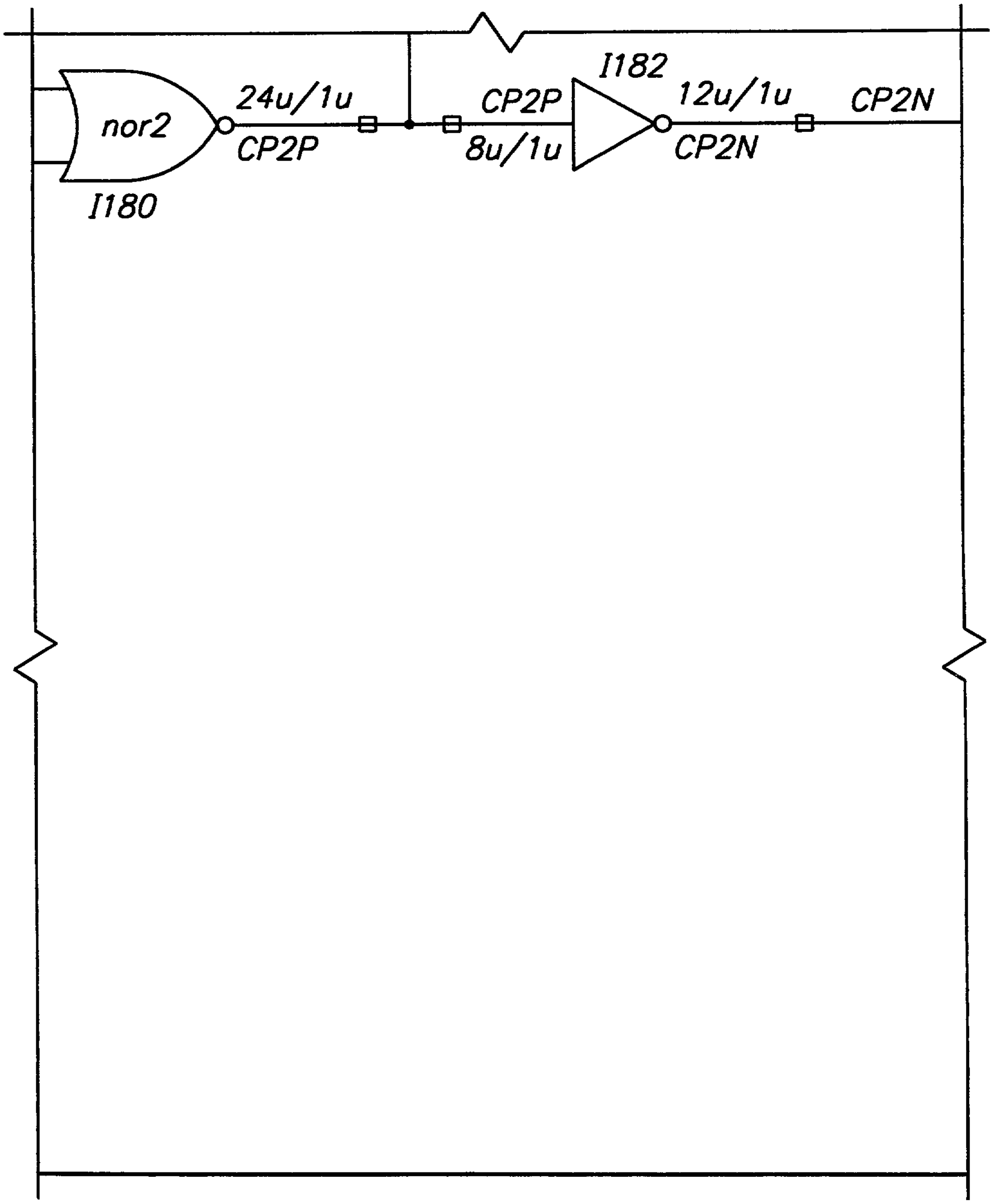


Fig 10.06DG

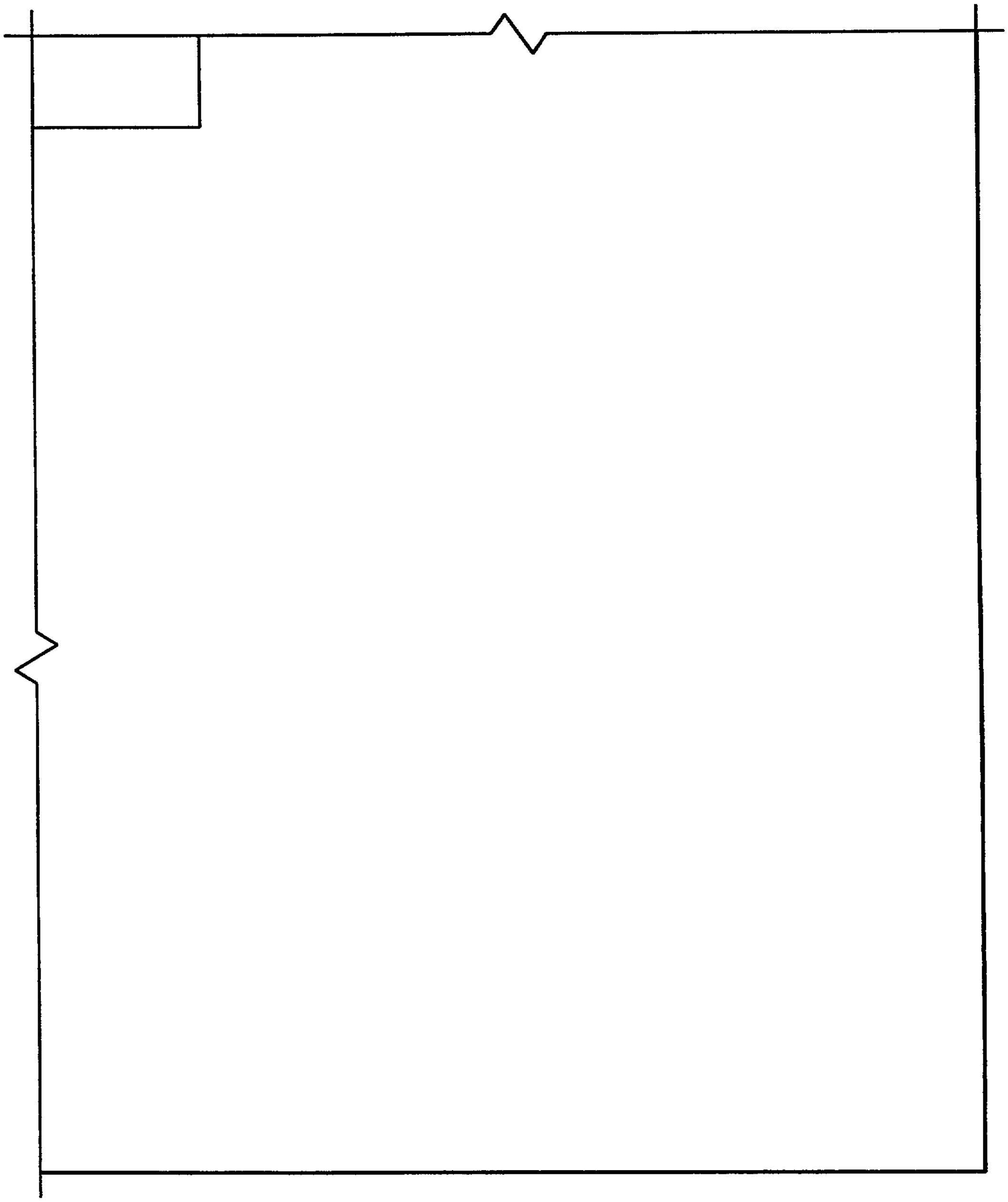


Fig 10.06DH

10.07AA	10.07AB	10.07AC	10.07AD
10.07BA	10.07BB	10.07BC	10.07BD
10.07CA	10.07CB	10.07CC	10.07CD

Fig 10.07

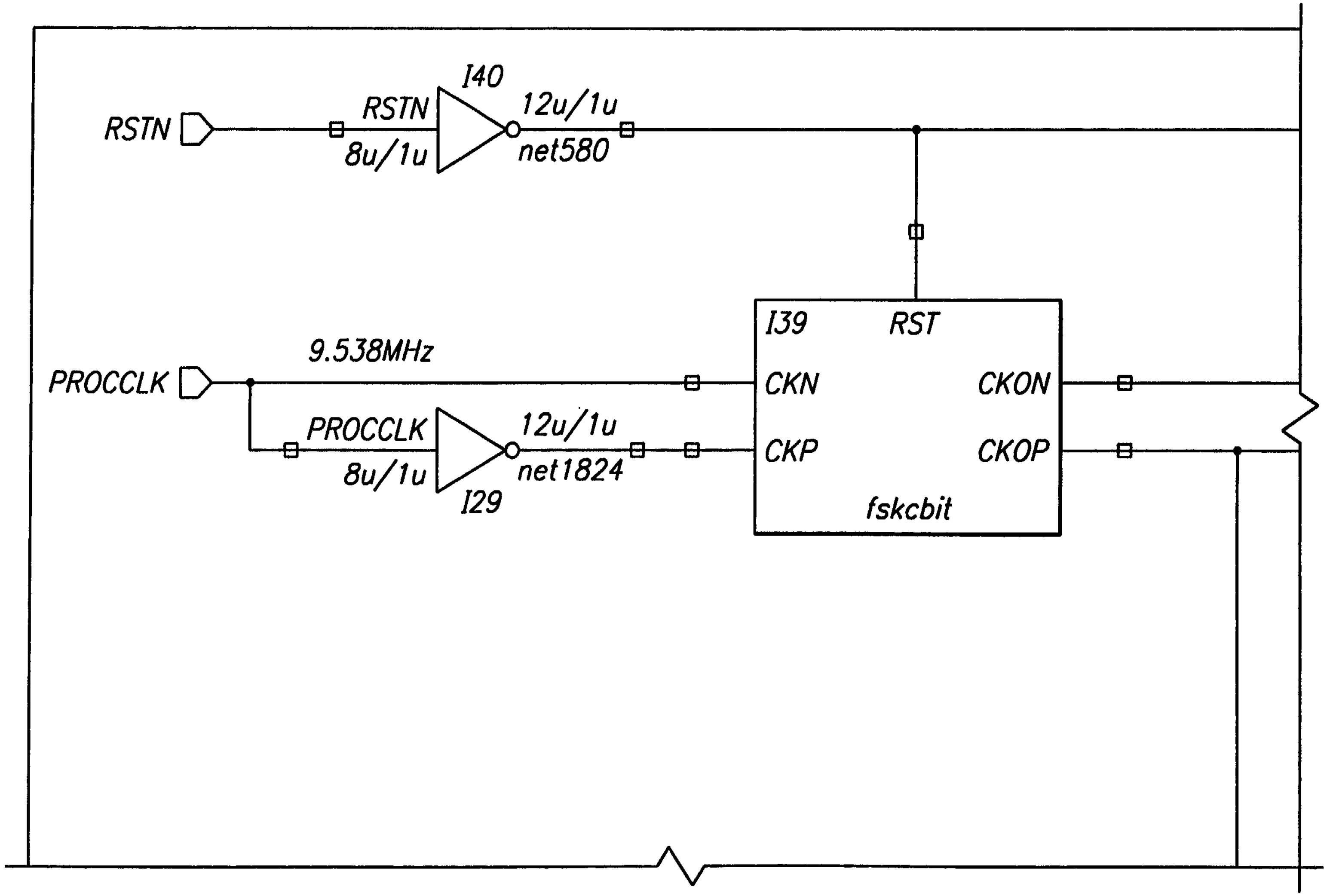

RSTN
RSTN
8u/1u
I40
12u/1u
net580
PROCCLK
9.538MHz
PROCCLK
8u/1u
I29
12u/1u
net1824
I39
RST
CKN
CKP
CKON
CKOP
fskcbit

FIG 10.01AA

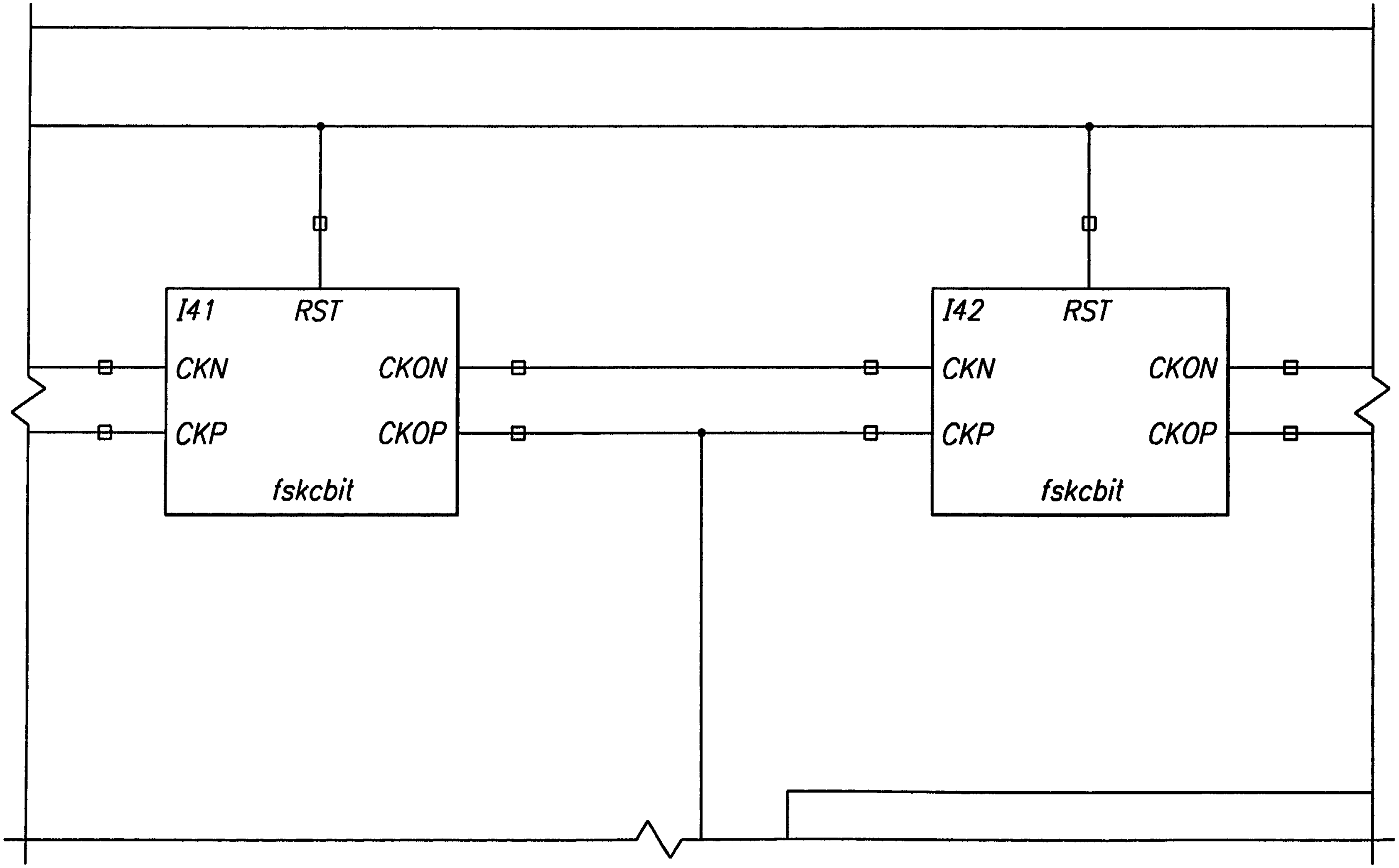

I41
RST
CKN
CKP
CKON
CKOP
fskcbit
I42
RST
CKN
CKP
CKON
CKOP
fskcbit

Fig 10.01AB

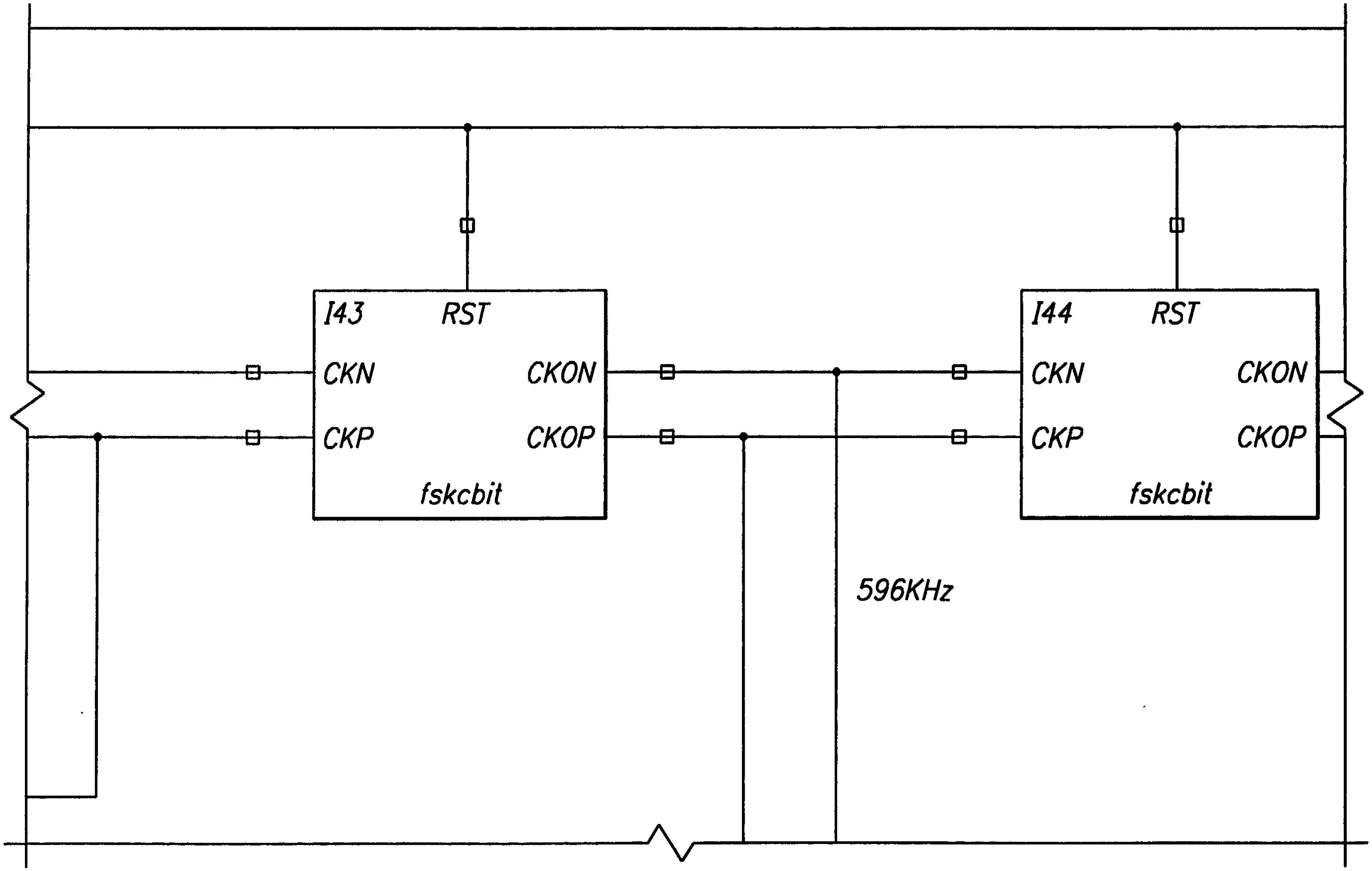

I43
RST
CKN
CKP
CKON
CKOP
fskcbit
I44
RST
CKN
CKP
CKON
CKOP
fskcbit
596KHz

Fig 10.07AC

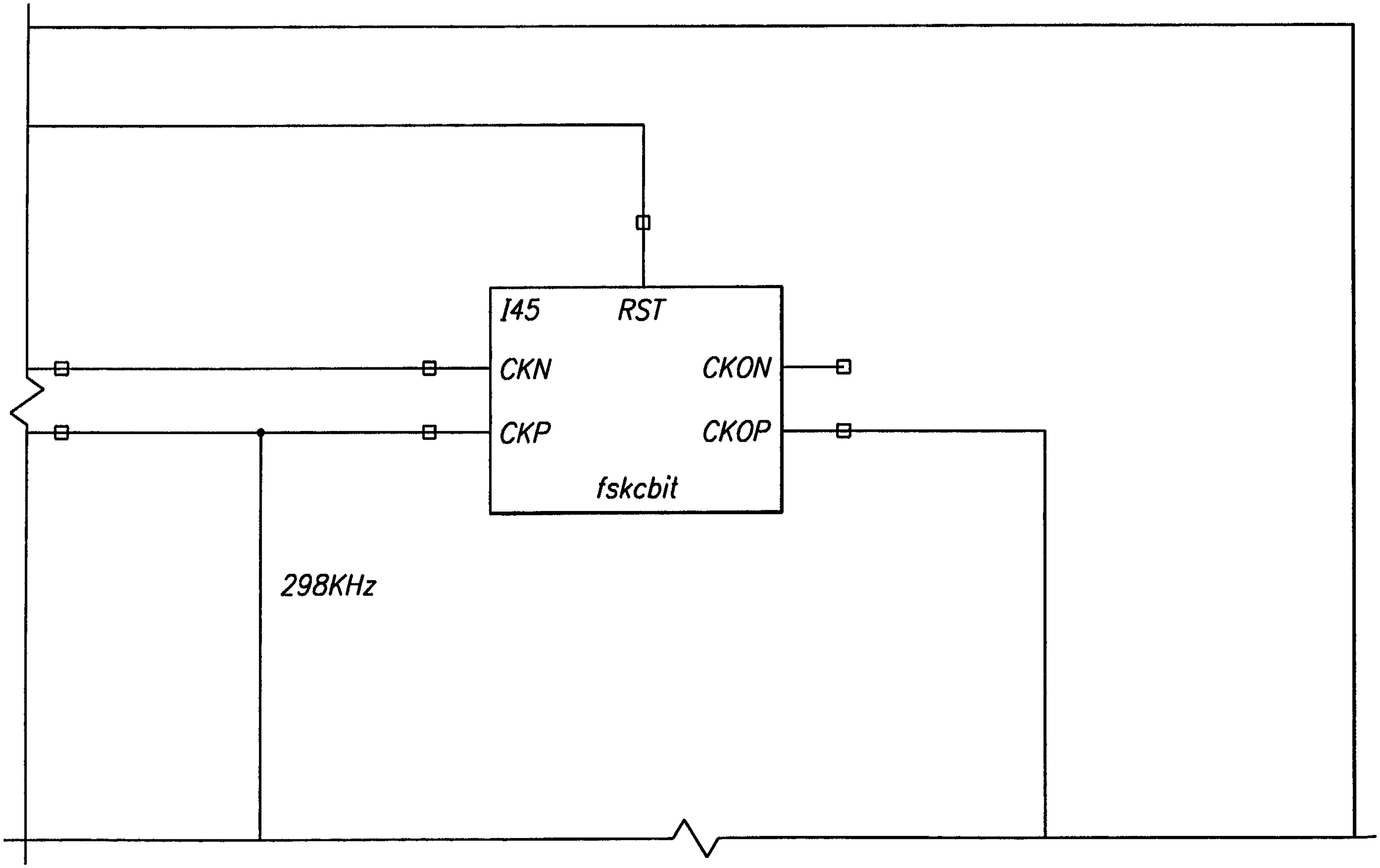


Fig 10.01AD

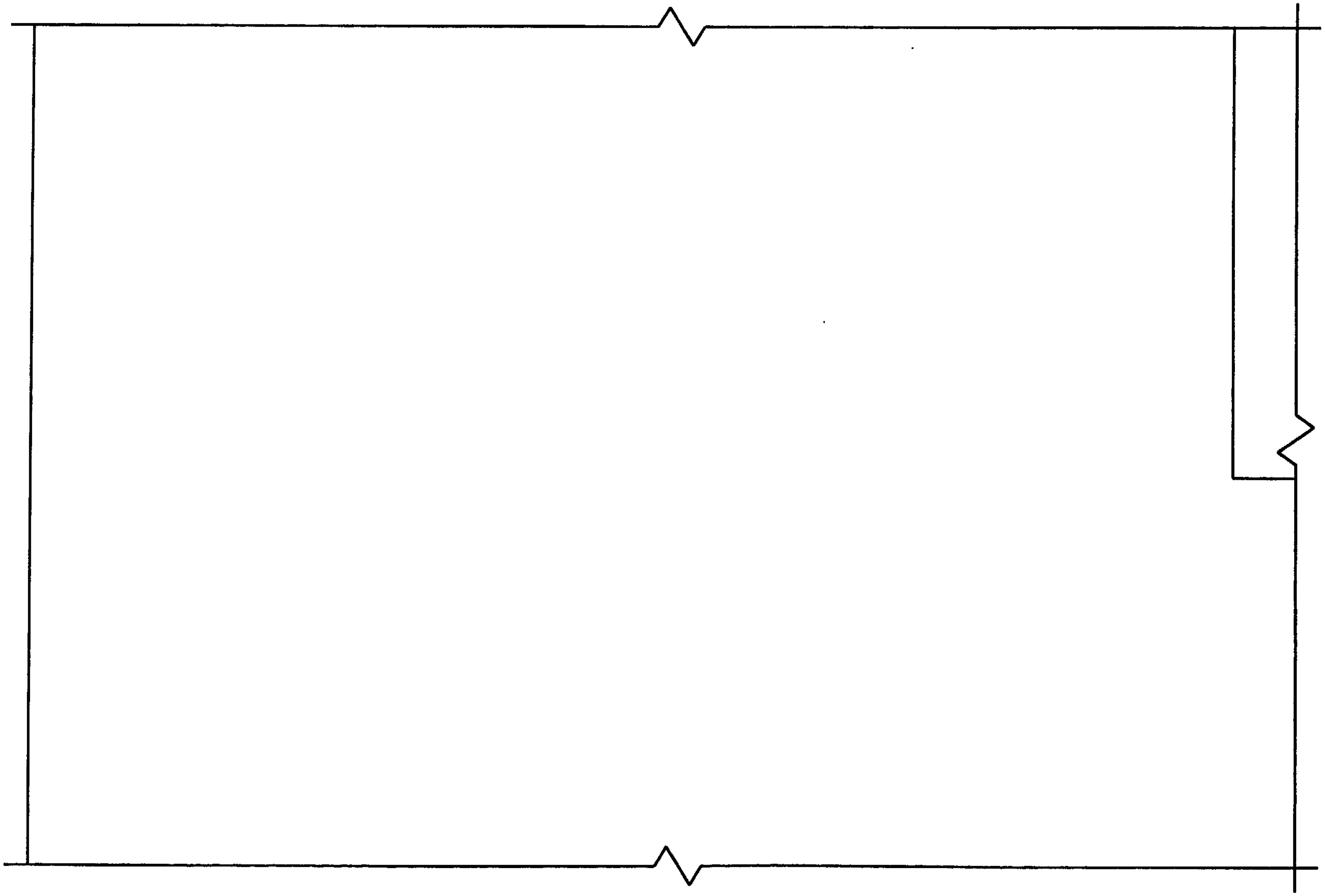


Fig 10.01BA

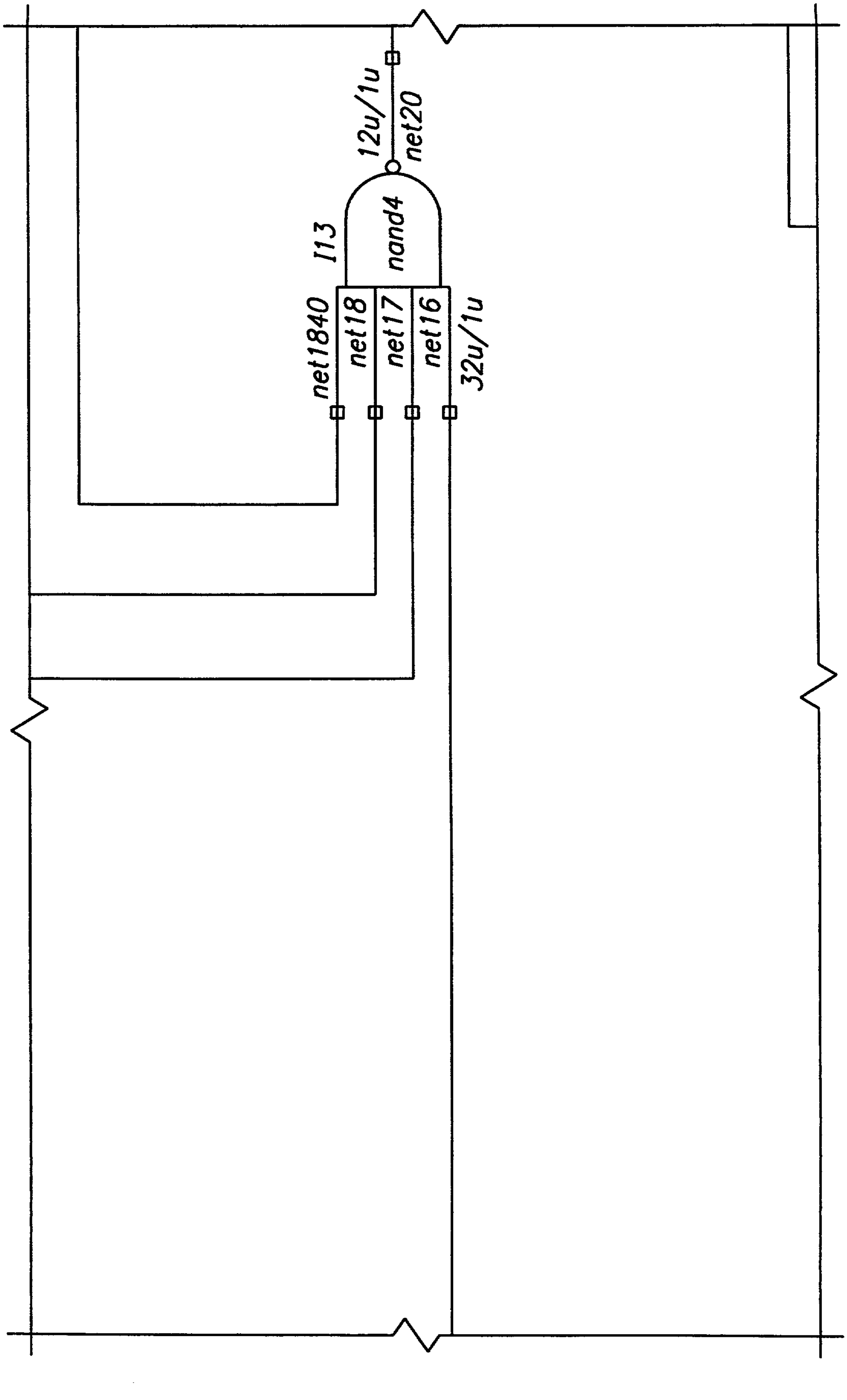


FIG. 10.01BB

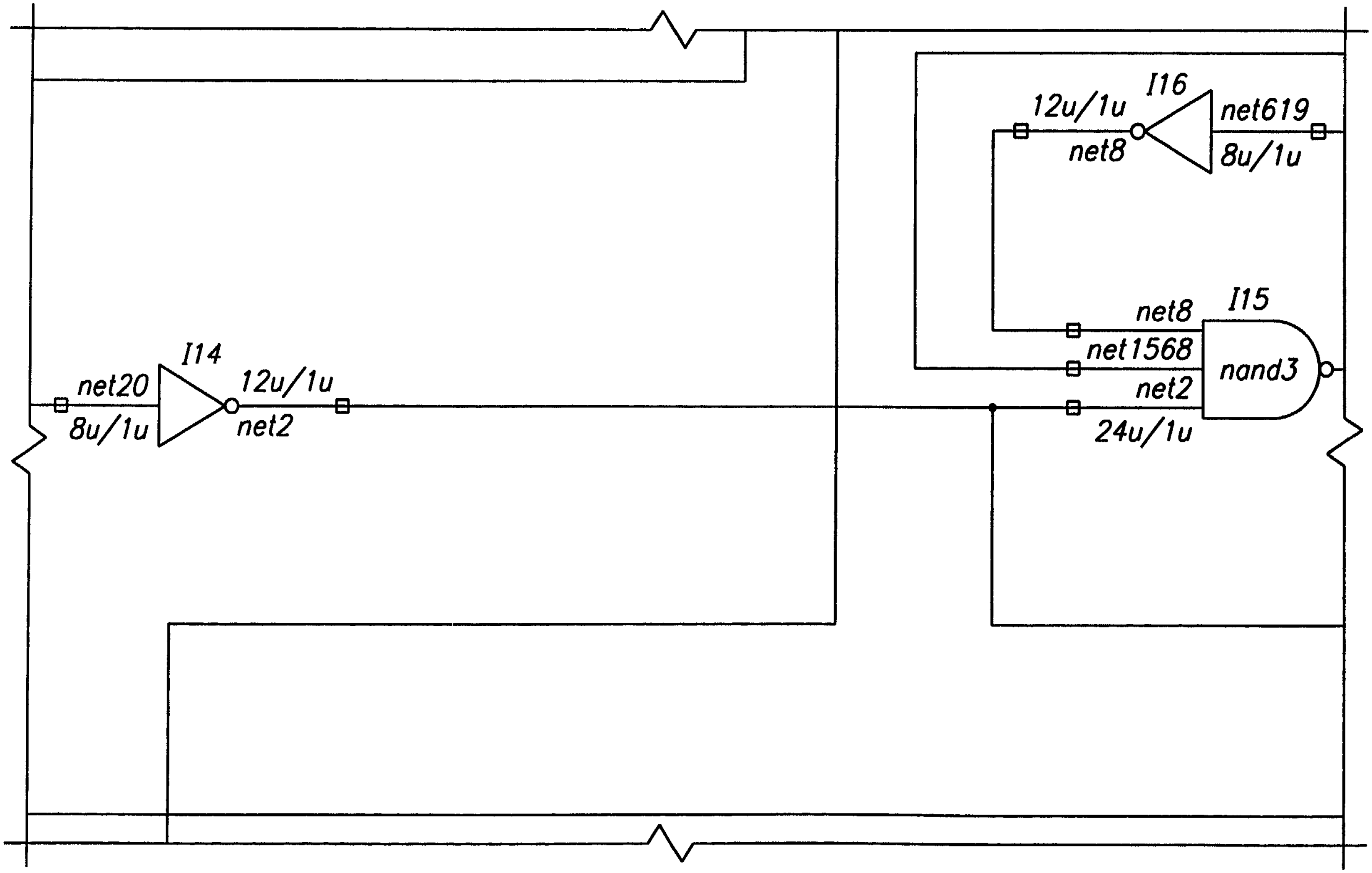

I14
net20
8u/1u
12u/1u
net2
I16
12u/1u
net8
net619
8u/1u
I15
net8
net1568
net2
24u/1u
nand3

FIG 10.01BC

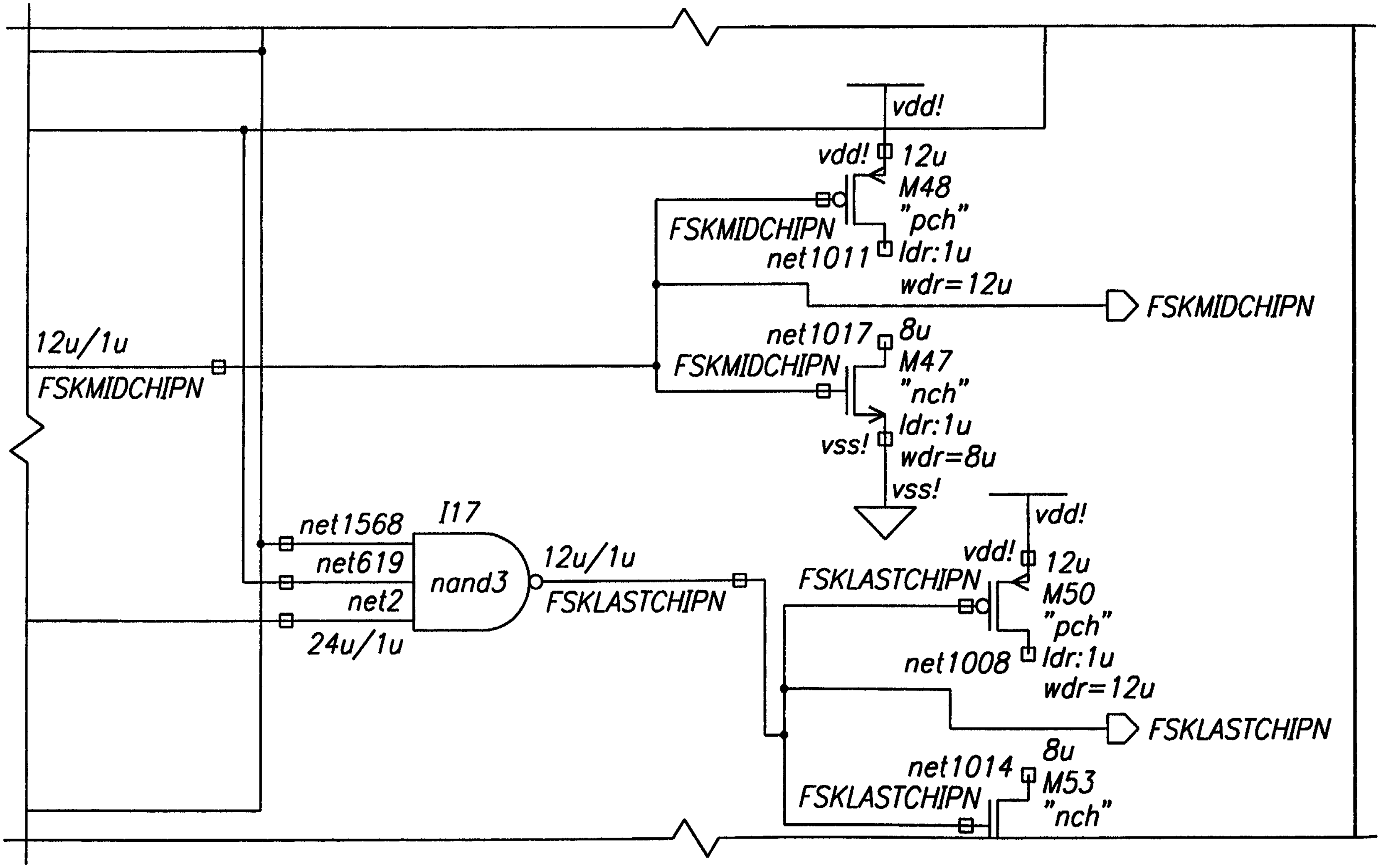

vdd!
vdd!
12u
M48
"pch"
FSKMIDCHIPN
net1011
ldr:1u
wdr=12u
FSKMIDCHIPN
12u/1u
FSKMIDCHIPN
net1017
8u
FSKMIDCHIPN
M47
"nch"
ldr:1u
vss!
wdr=8u
vss!
vdd!
net1568
I17
vdd!
12u
net619
nand3
12u/1u
FSKLASTCHIPN
M50
net2
FSKLASTCHIPN
"pch"
24u/1u
net1008
ldr:1u
wdr=12u
FSKLASTCHIPN
8u
net1014
M53
FSKLASTCHIPN
"nch"

Fig 10.07BD

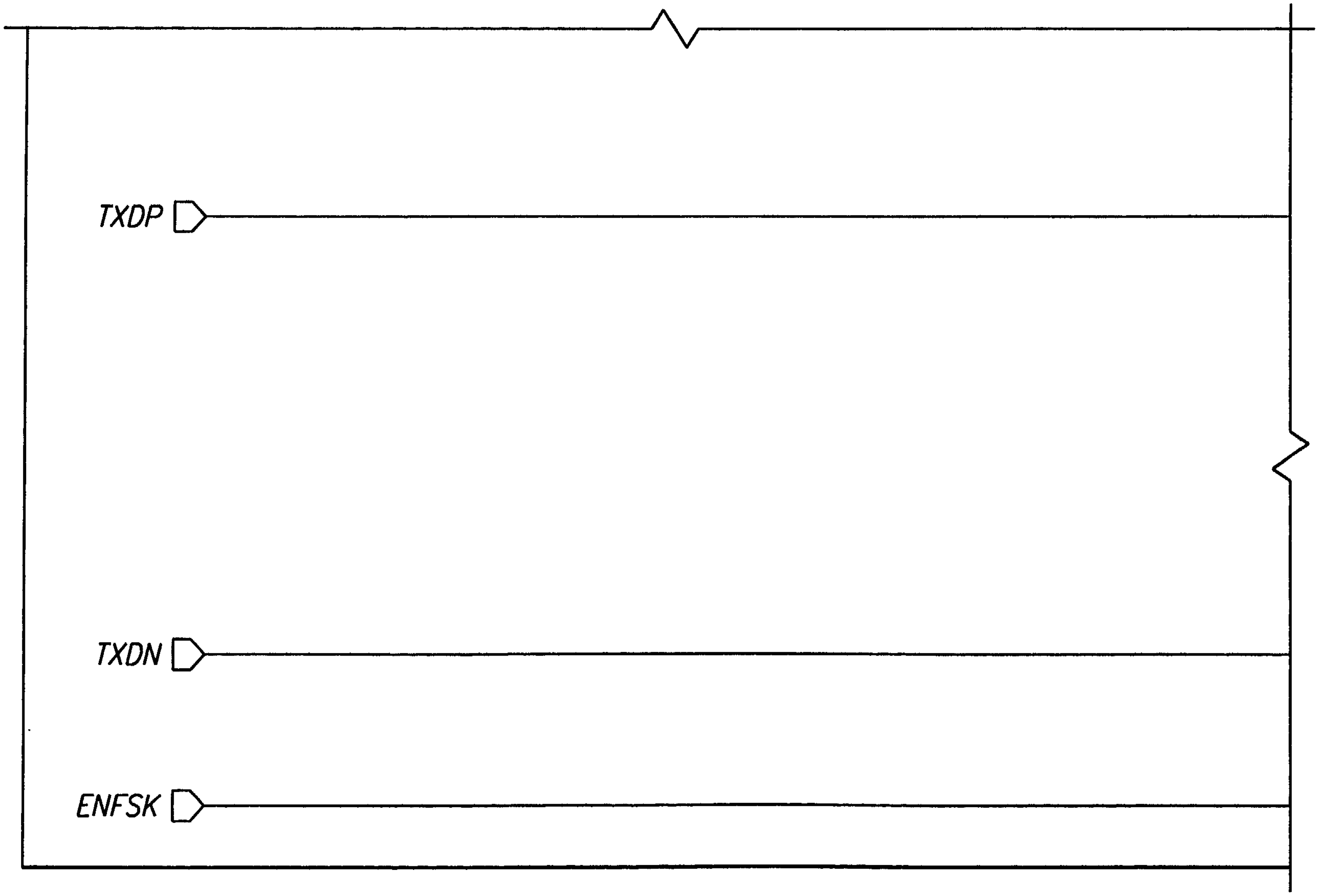


FIG. 10.01CA

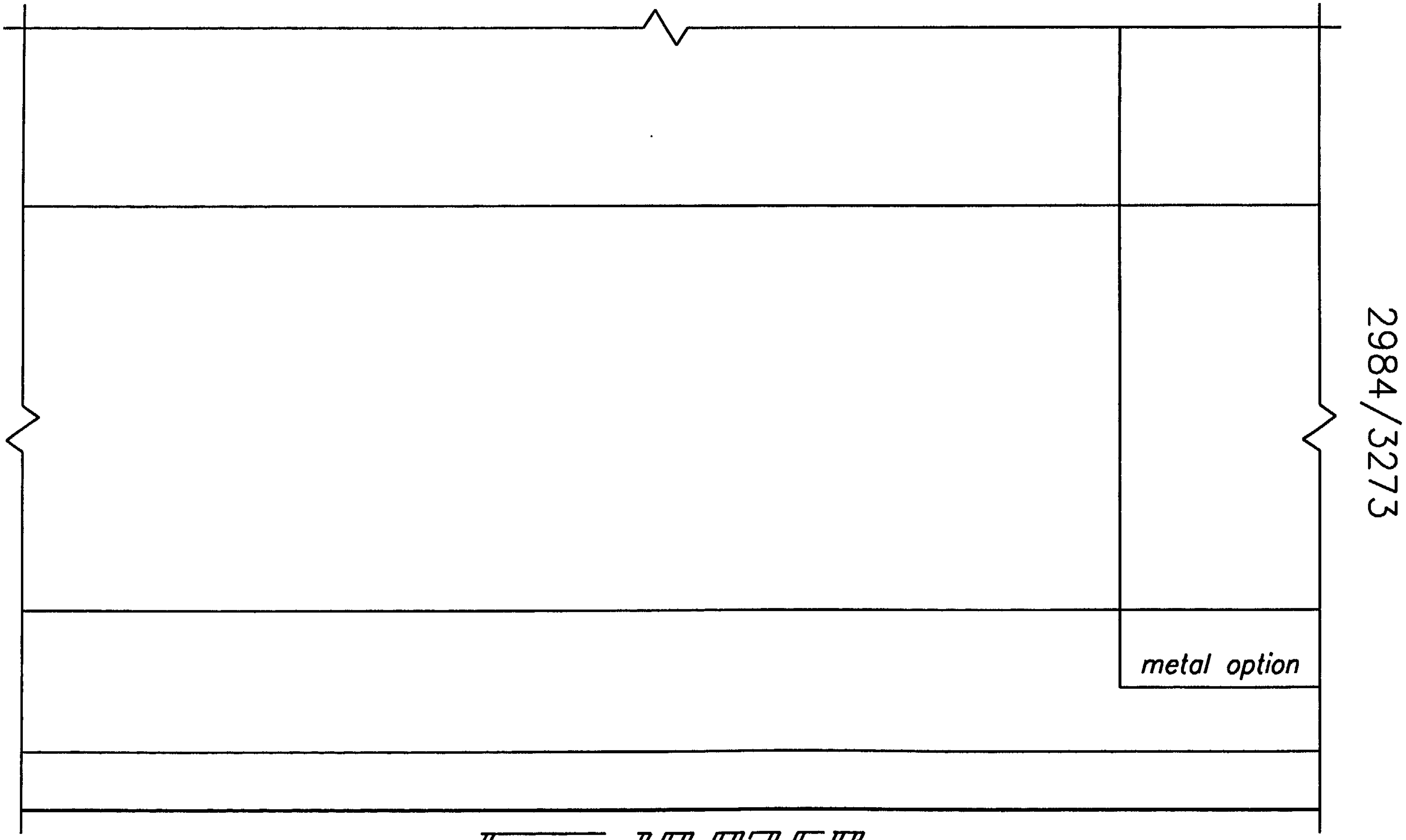
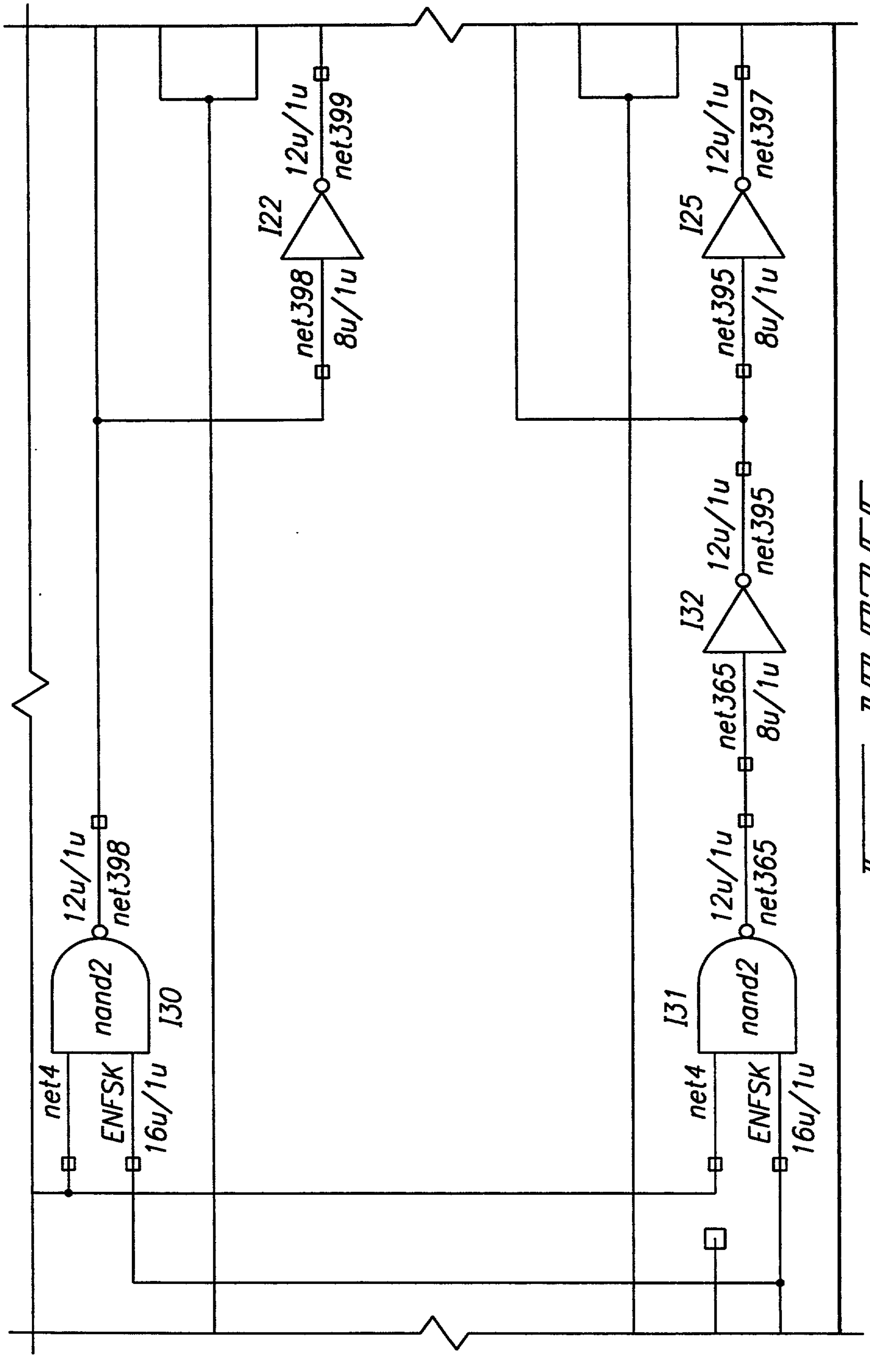
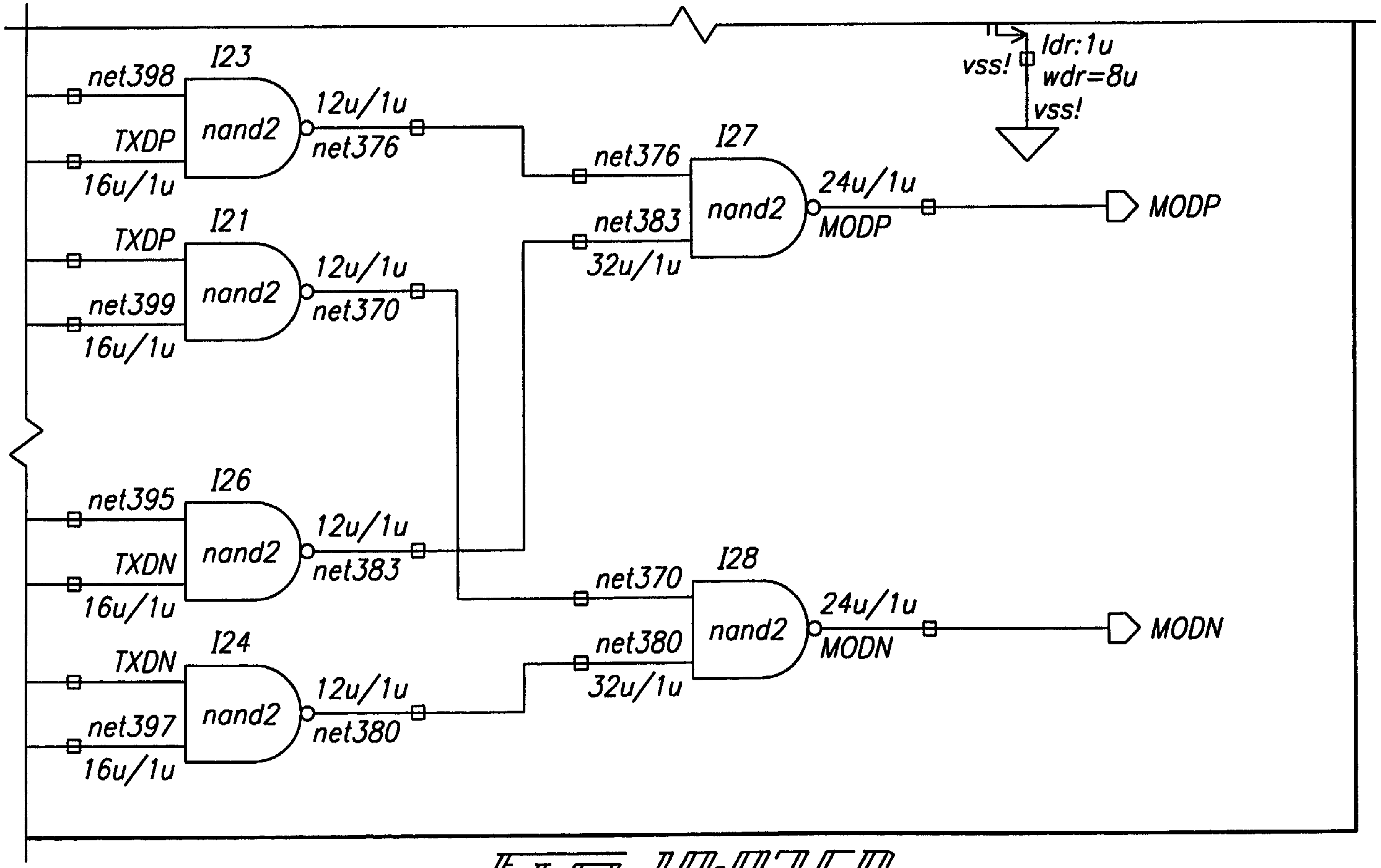


Fig 10.07CB



I22
12u/1u
net399
net398
8u/1u
I25
12u/1u
net397
net395
8u/1u
I32
12u/1u
net395
net365
8u/1u
12u/1u
net398
nand2
I30
net4
ENFSK
16u/1u
12u/1u
net365
nand2
I31
net4
ENFSK
16u/1u

Fig 10.07CC



I23
nand2
net398
TXDP
16u/1u
12u/1u
net376
I21
nand2
TXDP
net399
16u/1u
12u/1u
net370
I26
nand2
net395
TXDN
16u/1u
12u/1u
net383
I24
nand2
TXDN
net397
16u/1u
12u/1u
net380
I27
nand2
net376
net383
32u/1u
24u/1u
MODP
MODP
I28
nand2
net370
net380
32u/1u
24u/1u
MODN
MODN
vss!
ldr:1u
wdr=8u
vss!

Fig 10.07CD

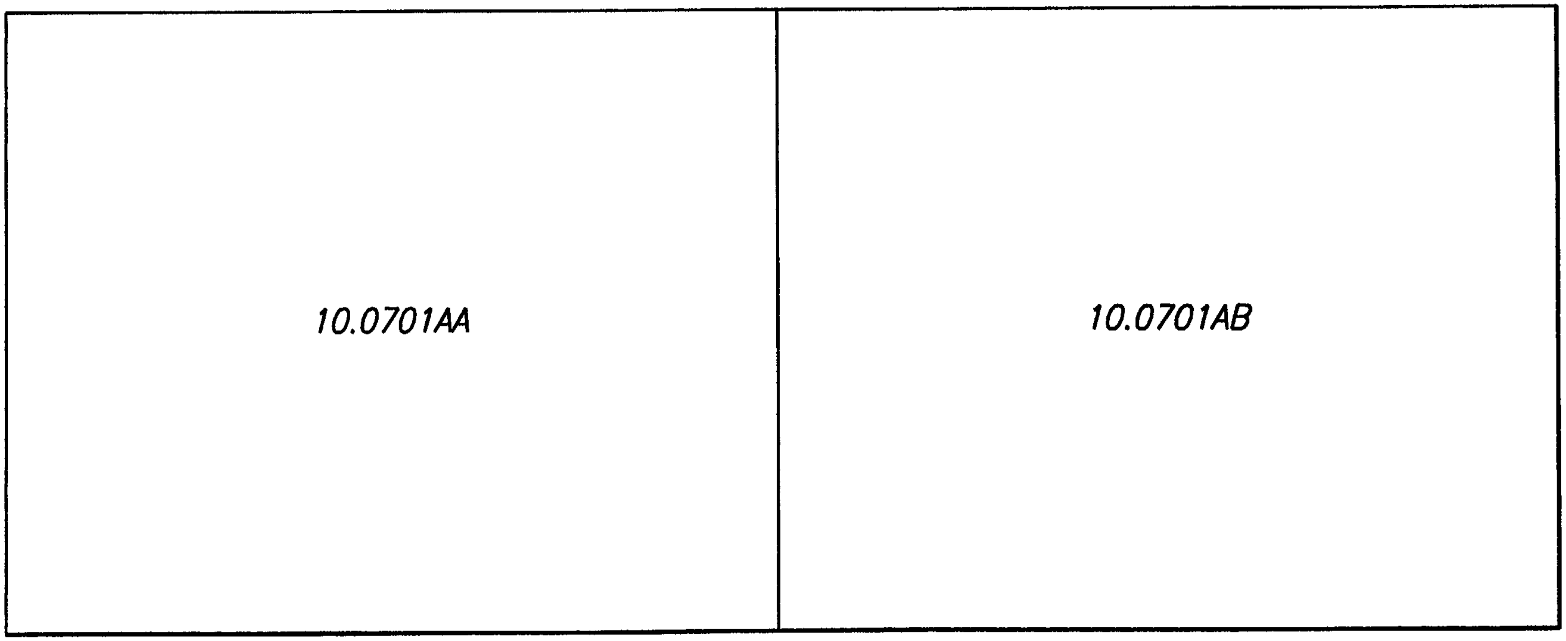


Fig 10.0701

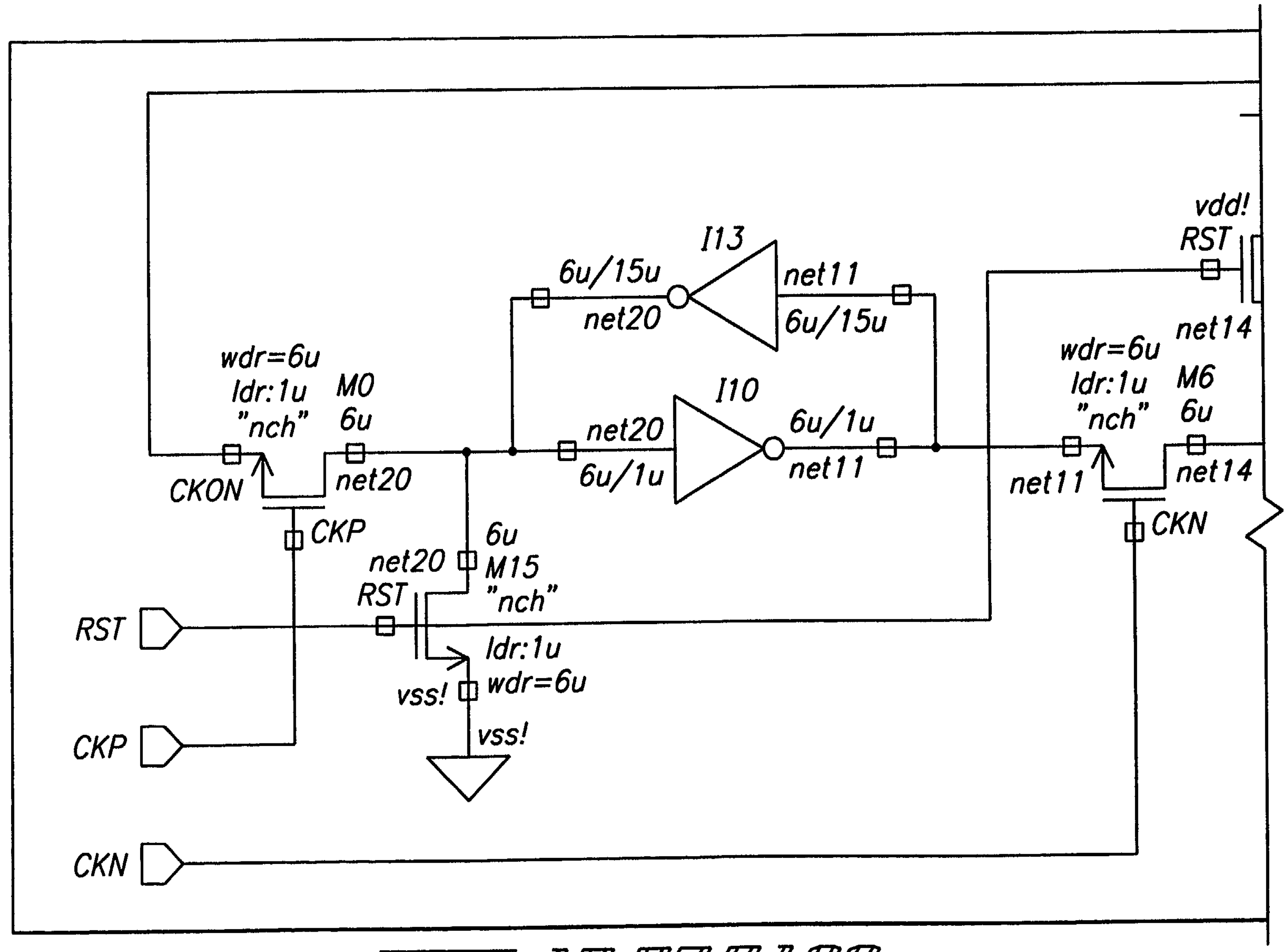


Fig 10.0701AA

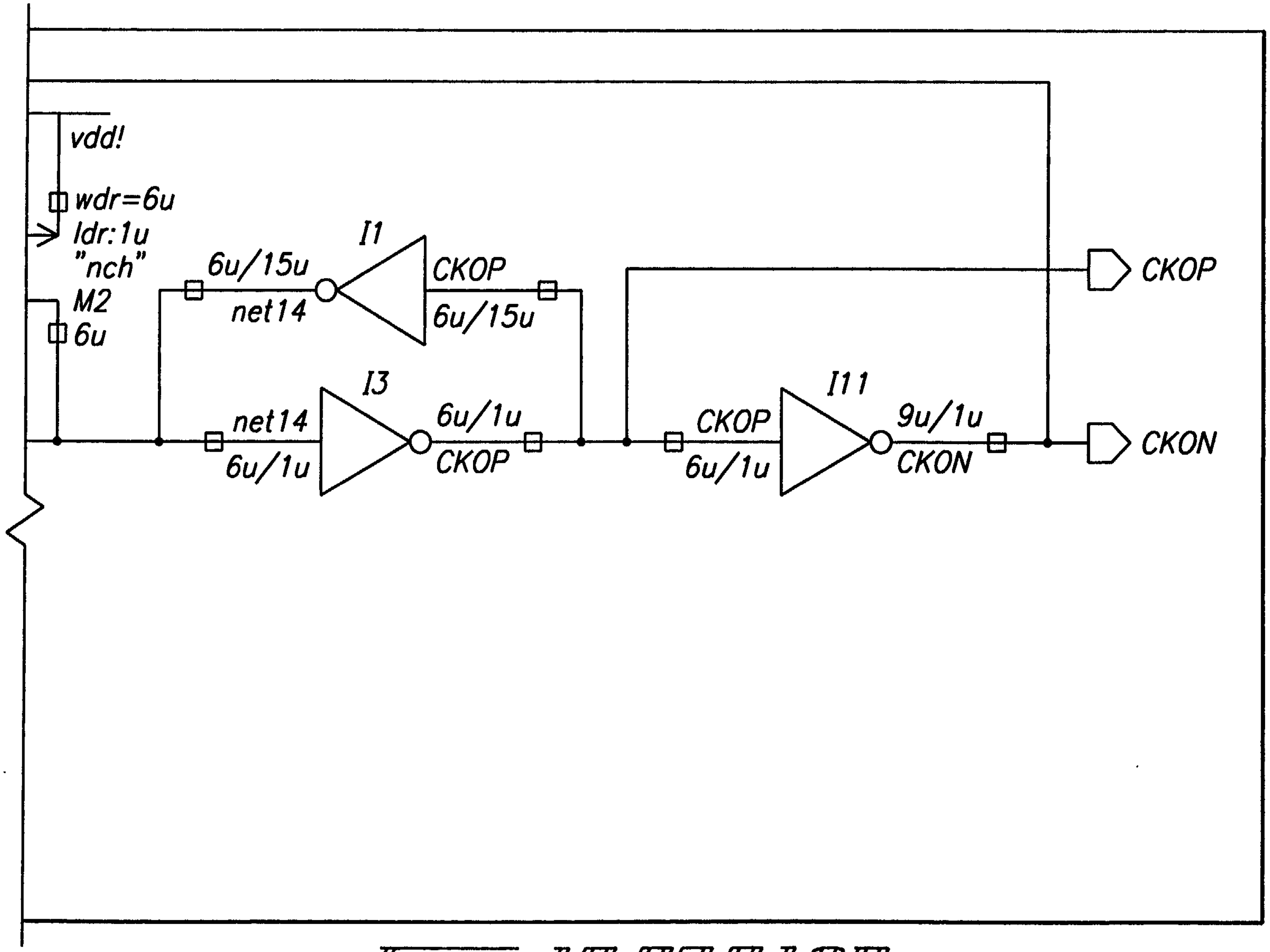


Fig 10.07101AB

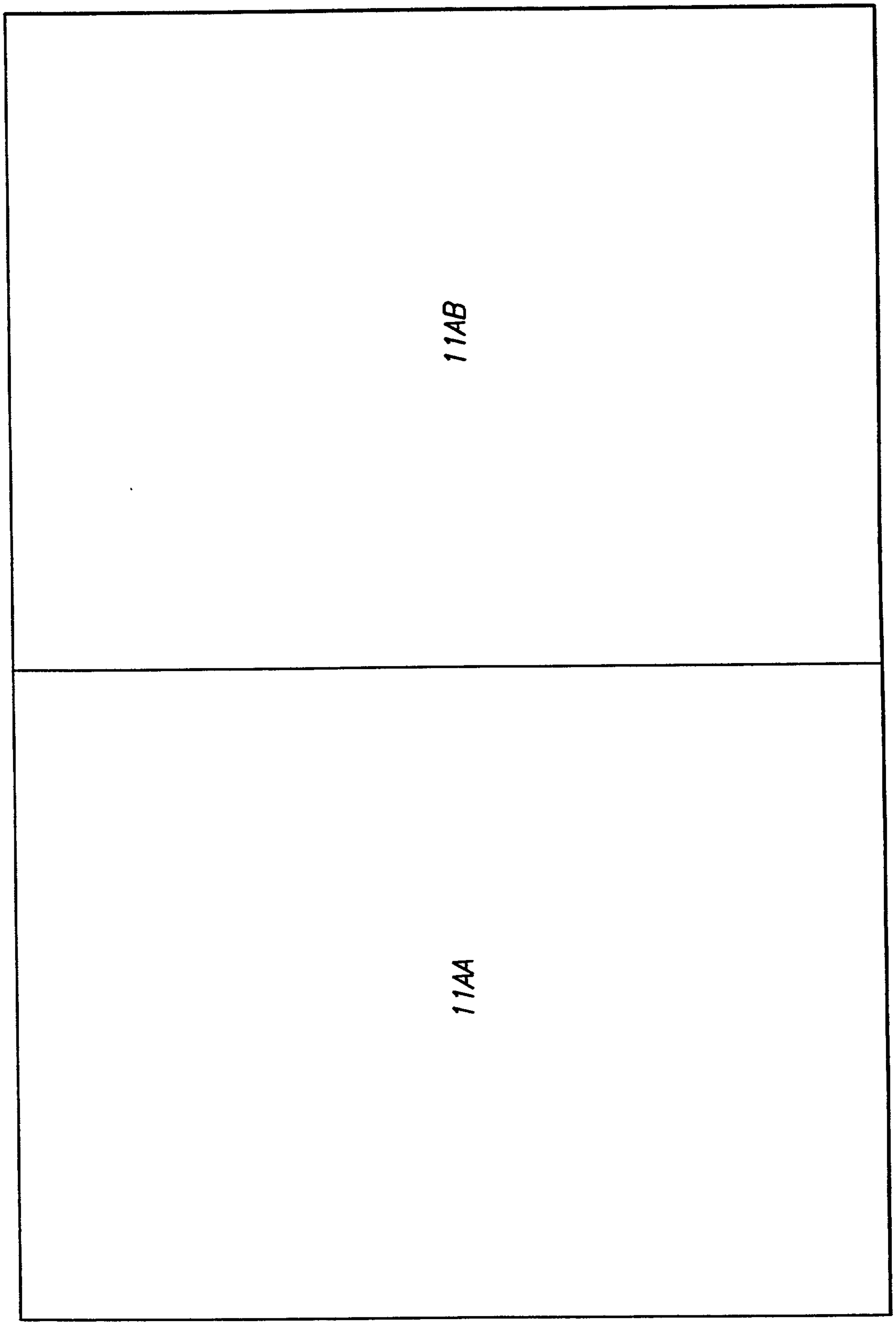


FIG. 11

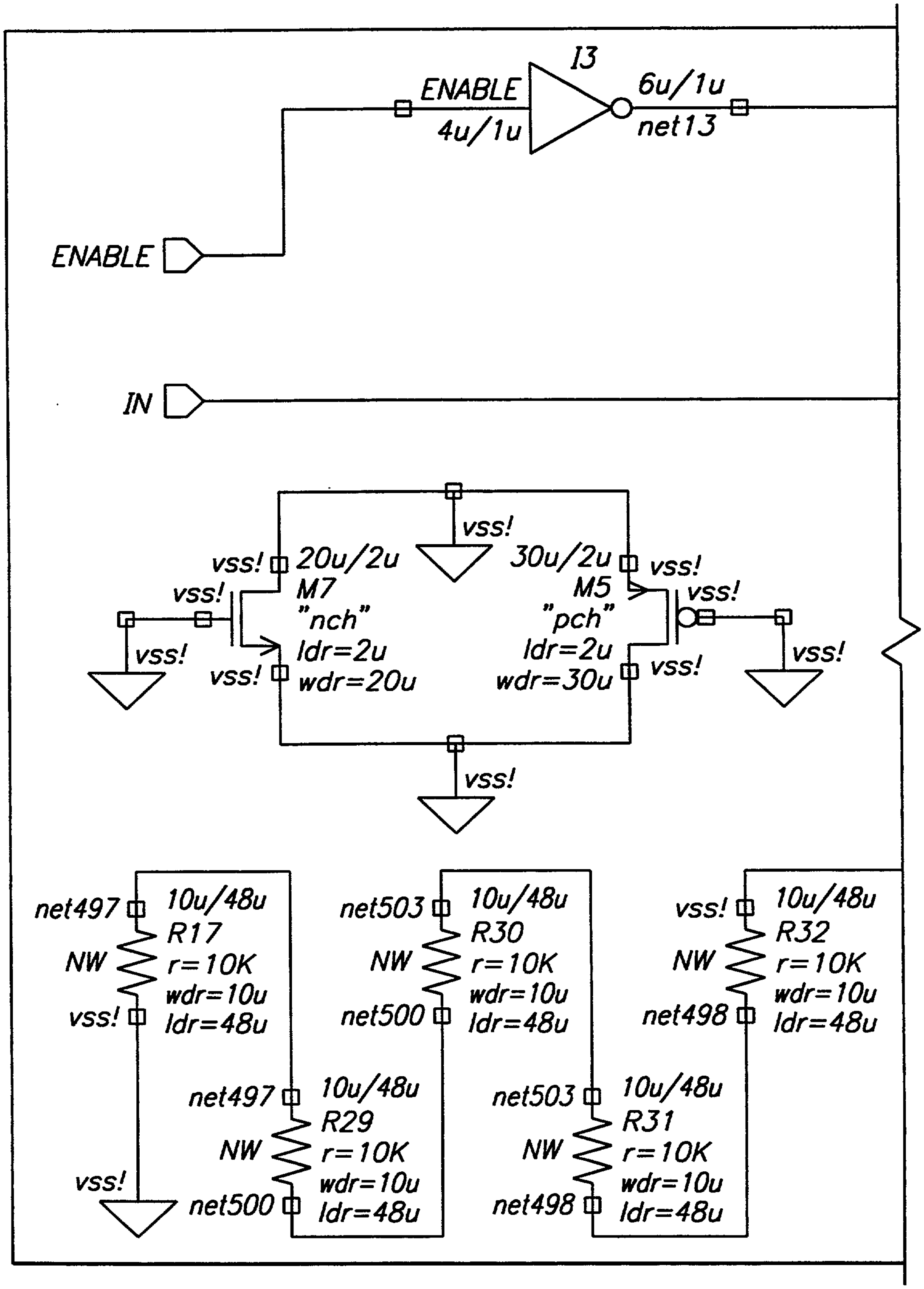

I3
ENABLE
4u/1u
6u/1u
net13
ENABLE
IN
vss!
vss!
20u/2u
M7
"nch"
ldr=2u
wdr=20u
vss!
vss!
vss!
30u/2u
M5
"pch"
ldr=2u
wdr=30u
vss!
vss!
vss!
vss!
vss!
net497
10u/48u
R17
NW
r=10K
wdr=10u
vss!
ldr=48u
net503
10u/48u
R30
NW
r=10K
wdr=10u
net500
ldr=48u
vss!
10u/48u
R32
NW
r=10K
wdr=10u
net498
ldr=48u
net497
10u/48u
R29
NW
r=10K
wdr=10u
net500
ldr=48u
vss!
net503
10u/48u
R31
NW
r=10K
wdr=10u
net498
ldr=48u

Fig 11AA

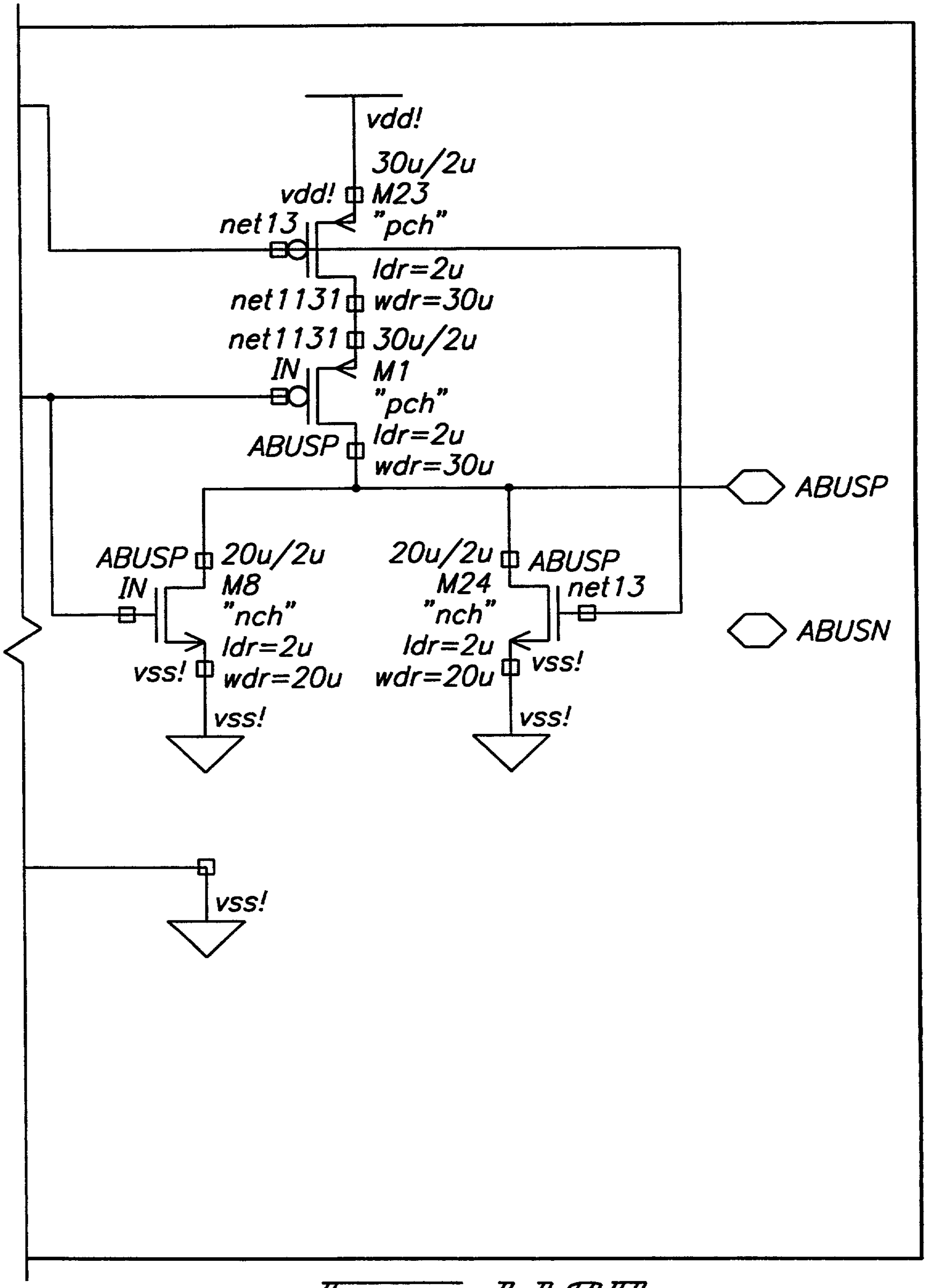

vdd!
30u/2u
vdd!
M23
net13
"pch"
ldr=2u
net1131
wdr=30u
net1131
30u/2u
IN
M1
"pch"
ABUSP
ldr=2u
wdr=30u
ABUSP
ABUSP
20u/2u
IN
M8
"nch"
ldr=2u
vss!
wdr=20u
vss!
20u/2u
ABUSP
M24
net13
"nch"
ldr=2u
vss!
wdr=20u
vss!
ABUSN
vss!

Fig 11AB

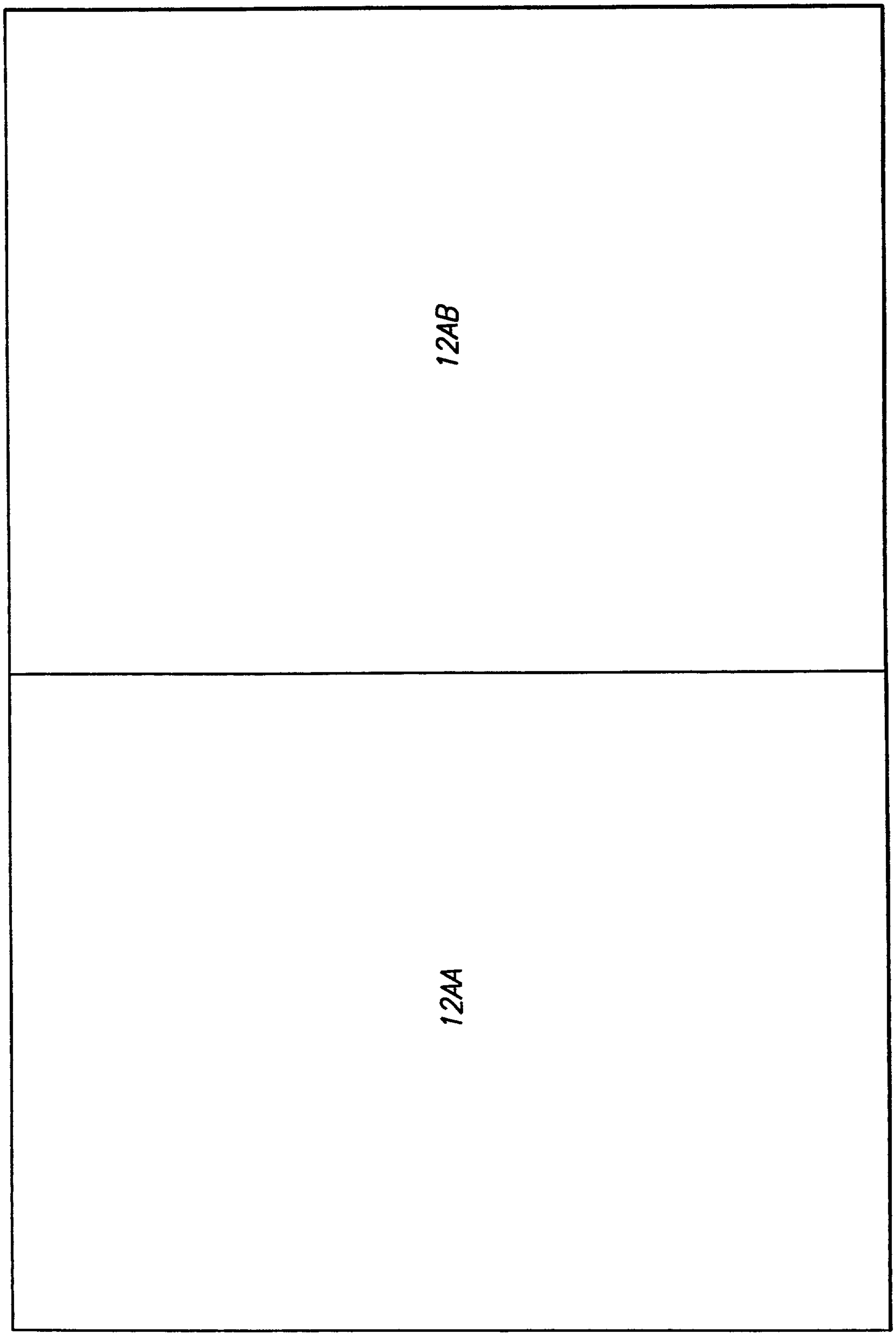


FIG. 12

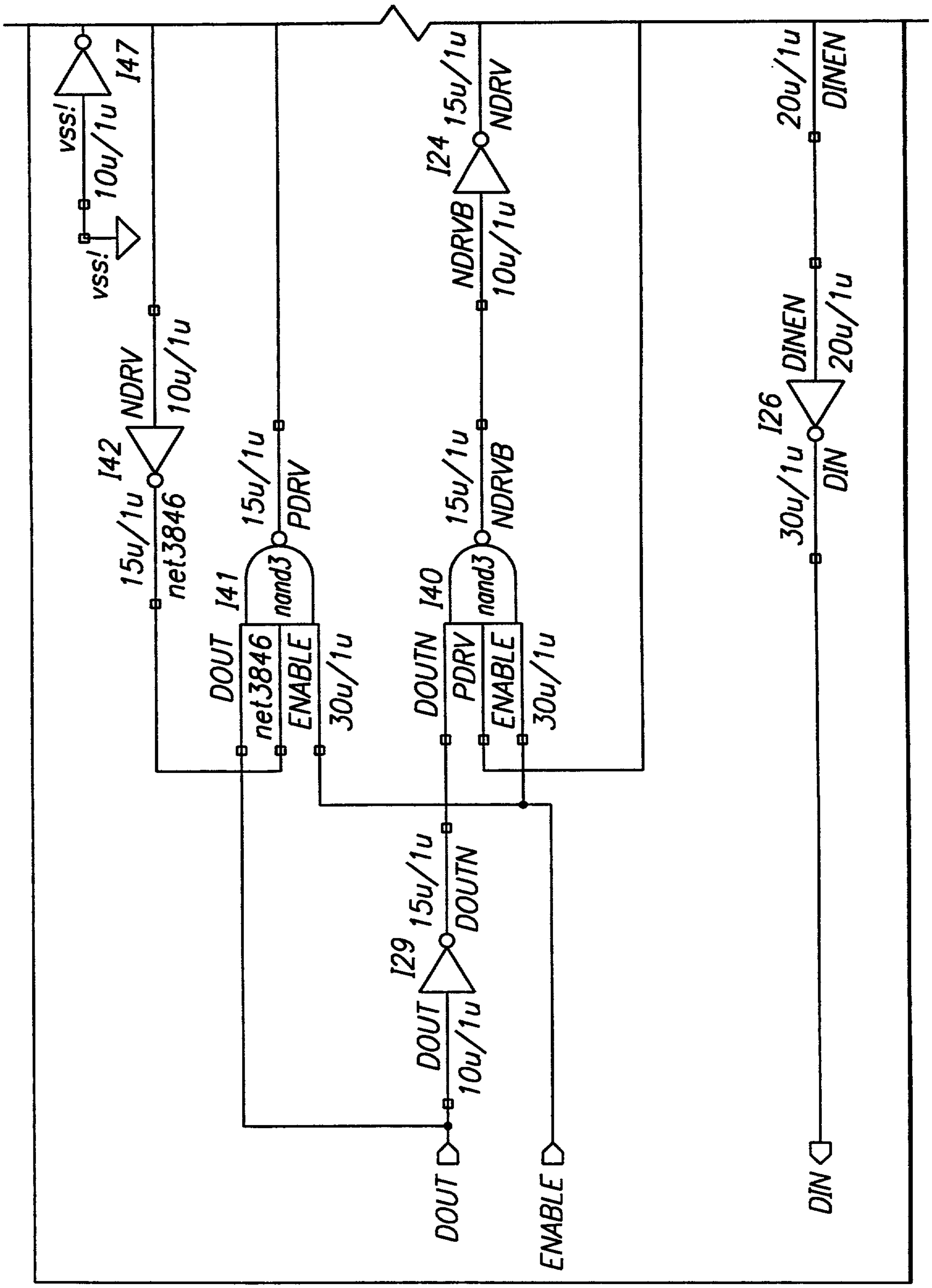

I47
vss!
10u/1u
vss!
I42
NDRV
10u/1u
15u/1u
net3846
I41
nand3
15u/1u
PDRV
DOUT
net3846
ENABLE
30u/1u
I24
15u/1u
NDRV
NDRVB
10u/1u
I40
nand3
15u/1u
NDRVB
DOUTN
PDRV
ENABLE
30u/1u
I29
15u/1u
DOUTN
DOUT
10u/1u
DOUT
ENABLE
20u/1u
DINEN
I26
DINEN
20u/1u
30u/1u
DIN
DIN

Fig. 12AA

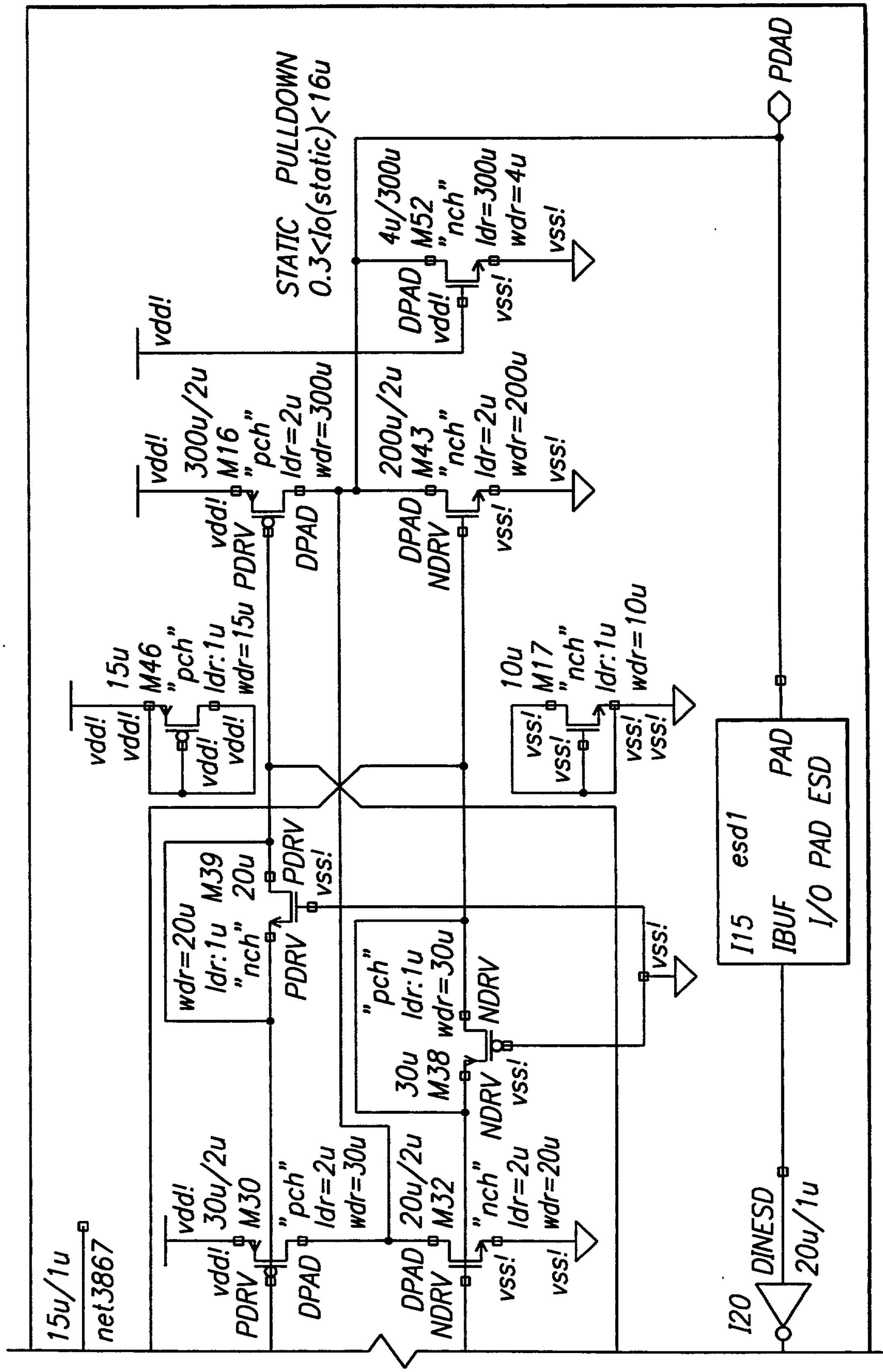

STATIC PULLDOWN
0.3<Io(static)<16u
PDAD
4u/300u
M52
"nch"
ldr=300u
wdr=4u
DPAD
vdd!
vss!
vdd!
300u/2u
M16
"pch"
ldr=2u
wdr=300u
PDRV
DPAD
200u/2u
M43
"nch"
ldr=2u
wdr=200u
NDRV
15u
M46
"pch"
ldr:1u
wdr=15u
10u
M17
"nch"
ldr:1u
wdr=10u
esd1
I15
IBUF
I/O PAD ESD
PAD
M39
20u
wdr=20u
ldr:1u
"nch"
"pch"
ldr:1u
wdr=30u
30u
M38
30u/2u
M30
"pch"
ldr=2u
wdr=30u
20u/2u
M32
"nch"
ldr=2u
wdr=20u
15u/1u
net3867
I20
DINESD
20u/1u

Fig 12AB

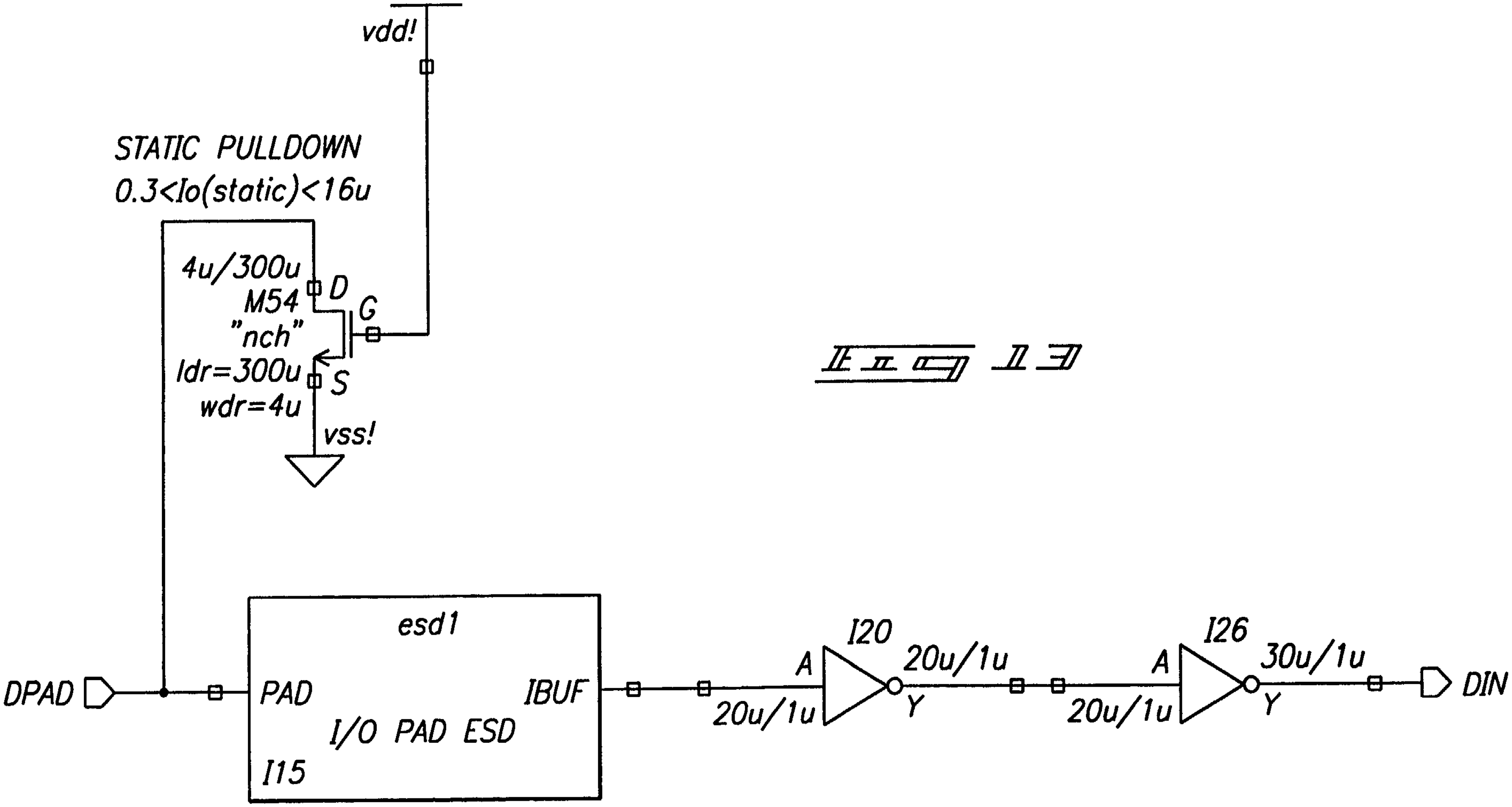

vdd!
STATIC PULLDOWN
0.3<Io(static)<16u
4u/300u
M54
"nch"
ldr=300u
wdr=4u
D
G
S
vss!
esd1
DPAD
PAD
I/O PAD ESD
I15
IBUF
A
I20
20u/1u
Y
20u/1u
A
I26
30u/1u
Y
20u/1u
DIN

FIG 13

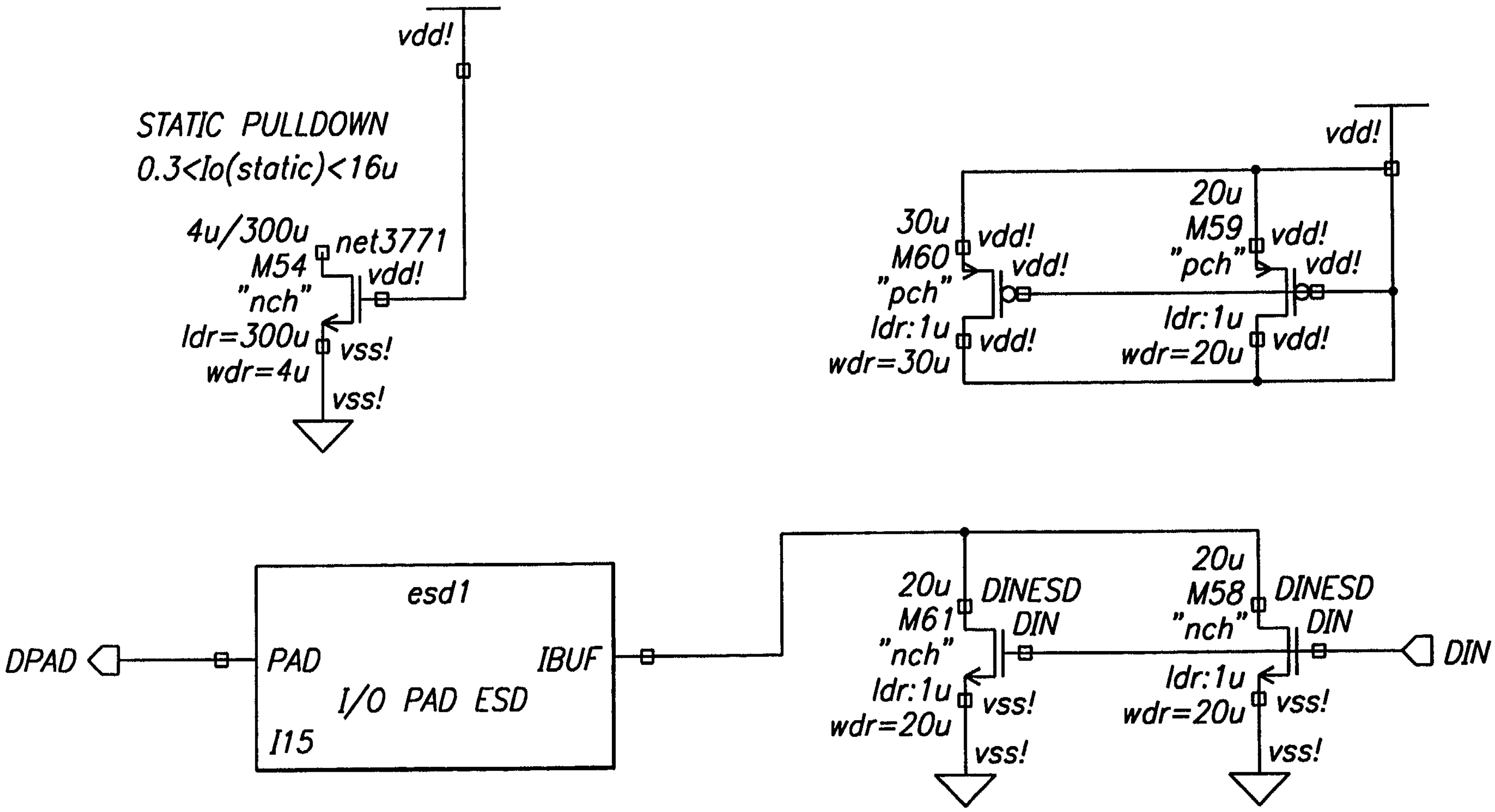

vdd!
STATIC PULLDOWN
0.3<Io(static)<16u
4u/300u
net3771
M54
vdd!
"nch"
ldr=300u
vss!
wdr=4u
vss!
vdd!
20u
M59
vdd!
"pch"
vdd!
ldr:1u
vdd!
wdr=20u
30u
M60
vdd!
"pch"
vdd!
ldr:1u
vdd!
wdr=30u
DPAD
esd1
PAD
IBUF
I/O PAD ESD
I15
20u
M61
DINESD
DIN
"nch"
ldr:1u
vss!
wdr=20u
vss!
20u
M58
DINESD
DIN
"nch"
ldr:1u
vss!
wdr=20u
vss!
DIN

Fig 13.5

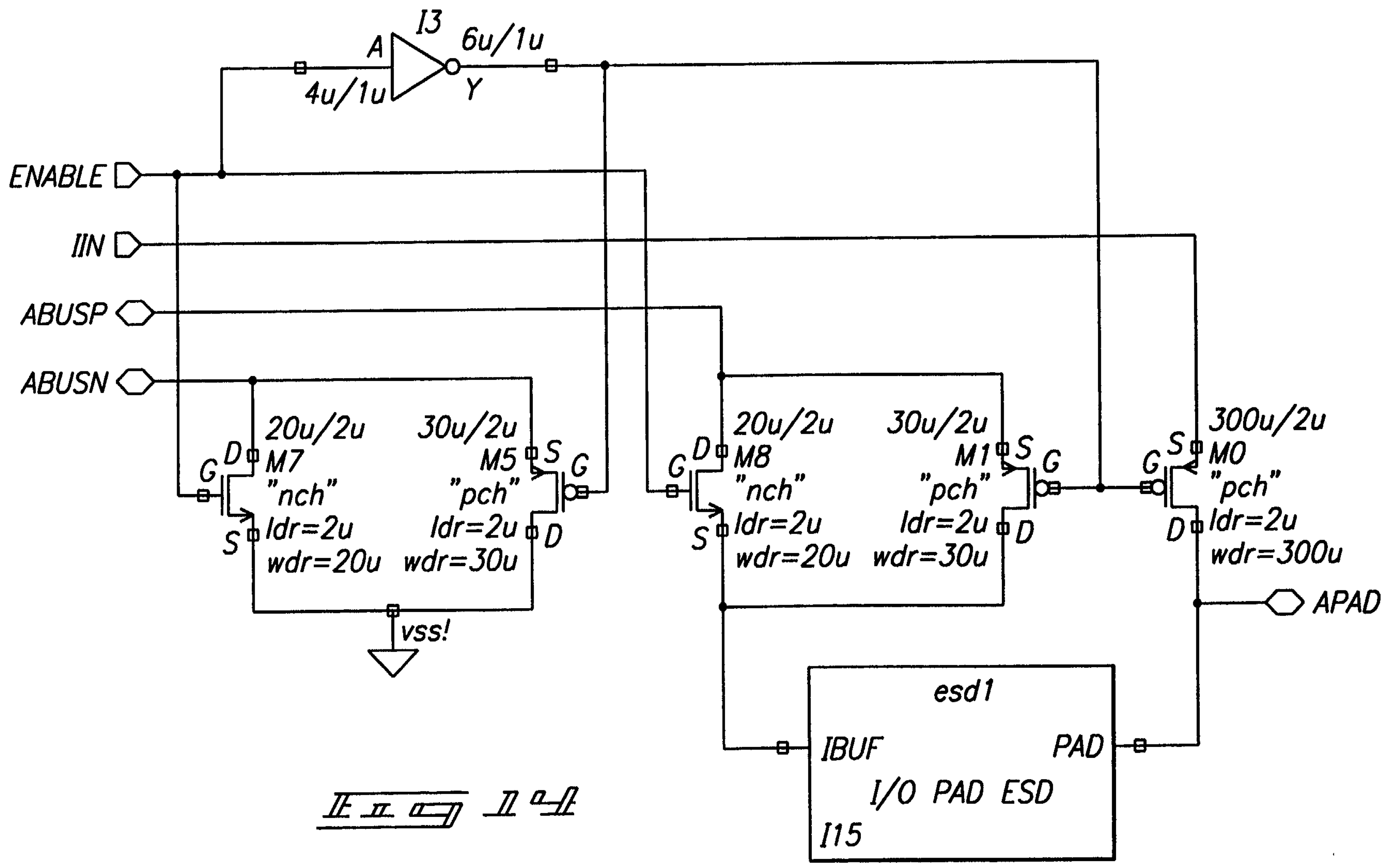

I3
A
Y
6u/1u
4u/1u
ENABLE
IIN
ABUSP
ABUSN
20u/2u
G
D
M7
"nch"
S
ldr=2u
wdr=20u
30u/2u
M5
S
G
"pch"
ldr=2u
D
wdr=30u
vss!
20u/2u
G
D
M8
"nch"
S
ldr=2u
wdr=20u
30u/2u
M1
S
G
"pch"
ldr=2u
D
wdr=30u
300u/2u
G
S
M0
"pch"
D
ldr=2u
wdr=300u
APAD
esd1
IBUF
PAD
I/O PAD ESD
I15

Fig 14

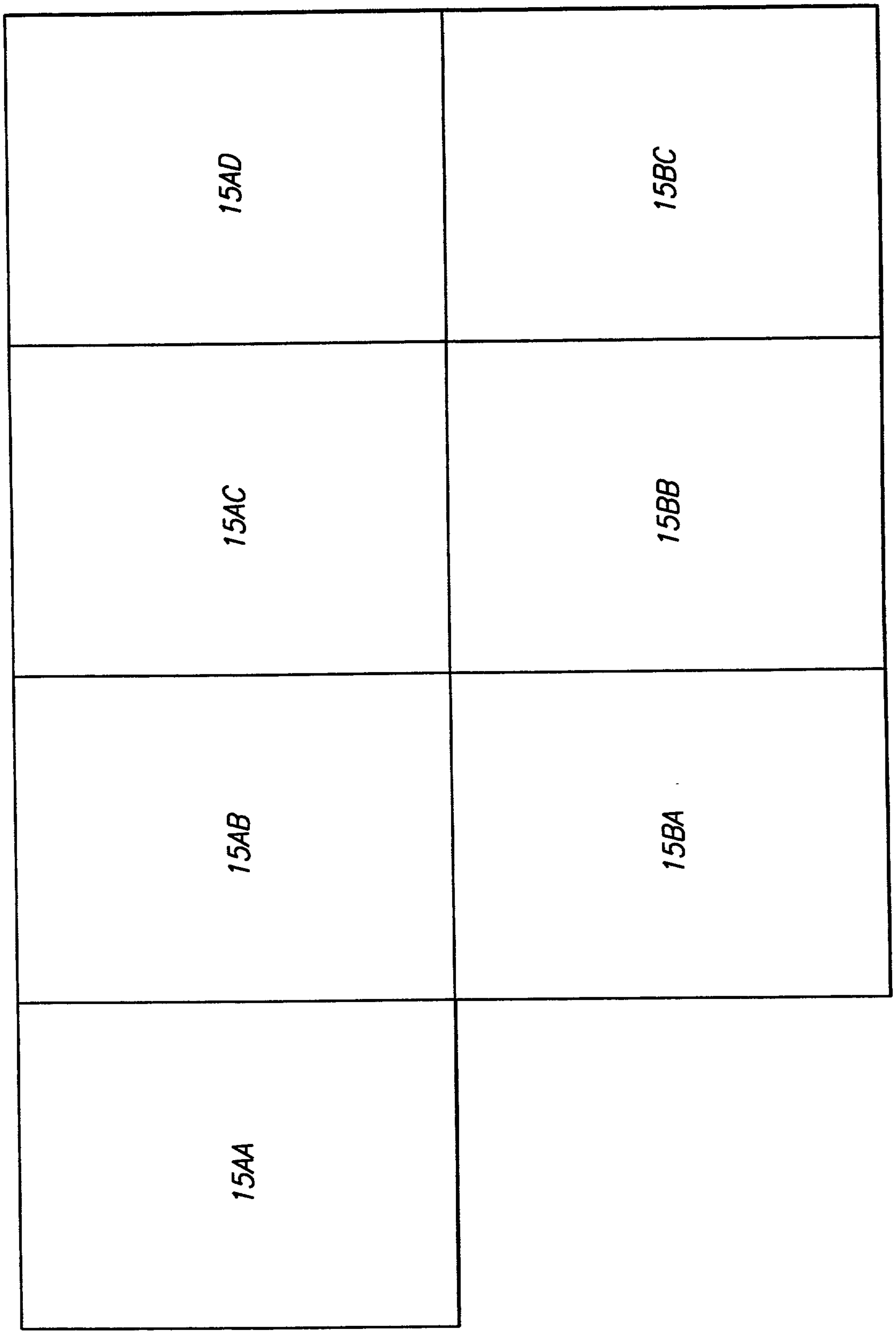


FIG. 15

3000/3273

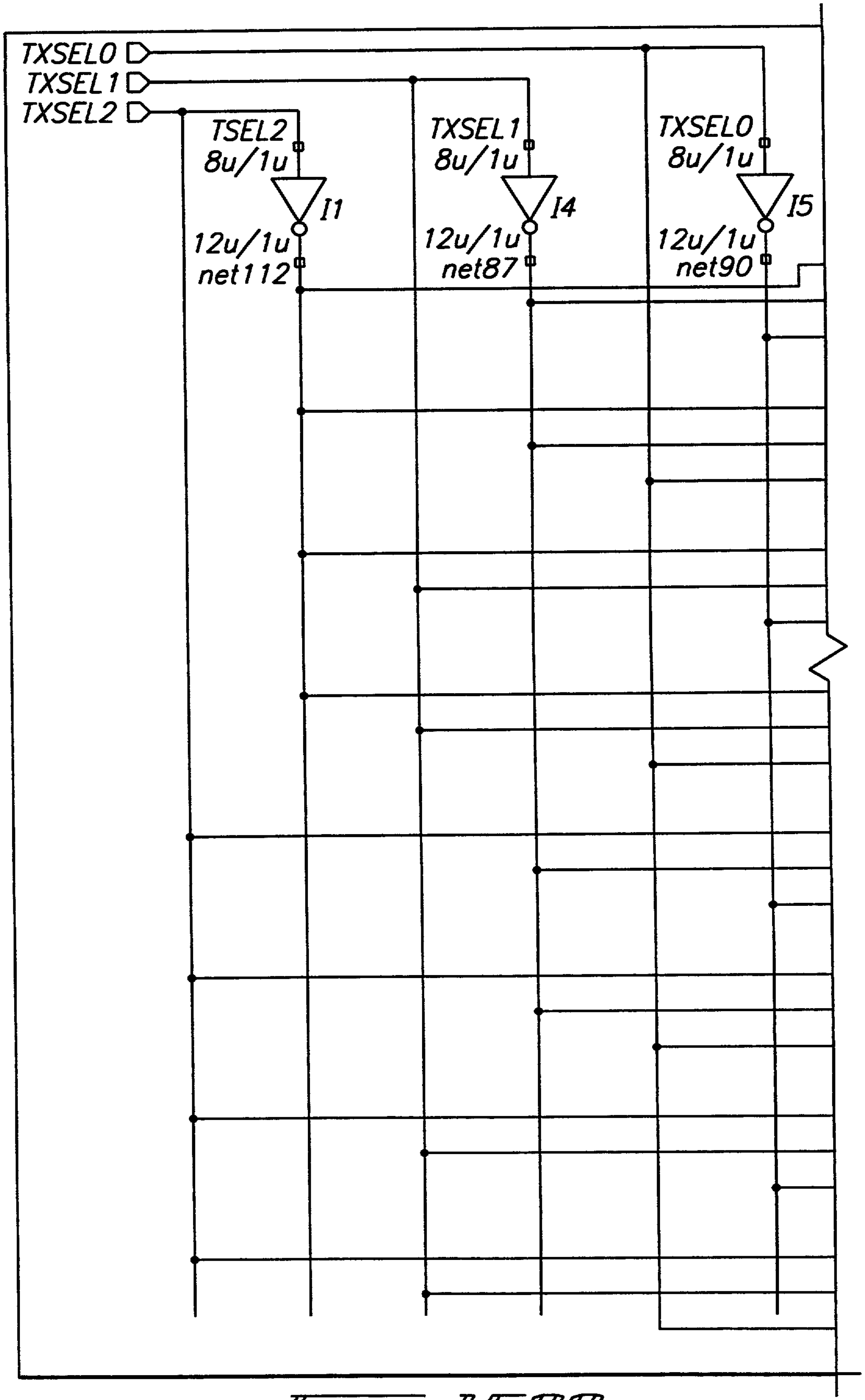


Fig 15AA

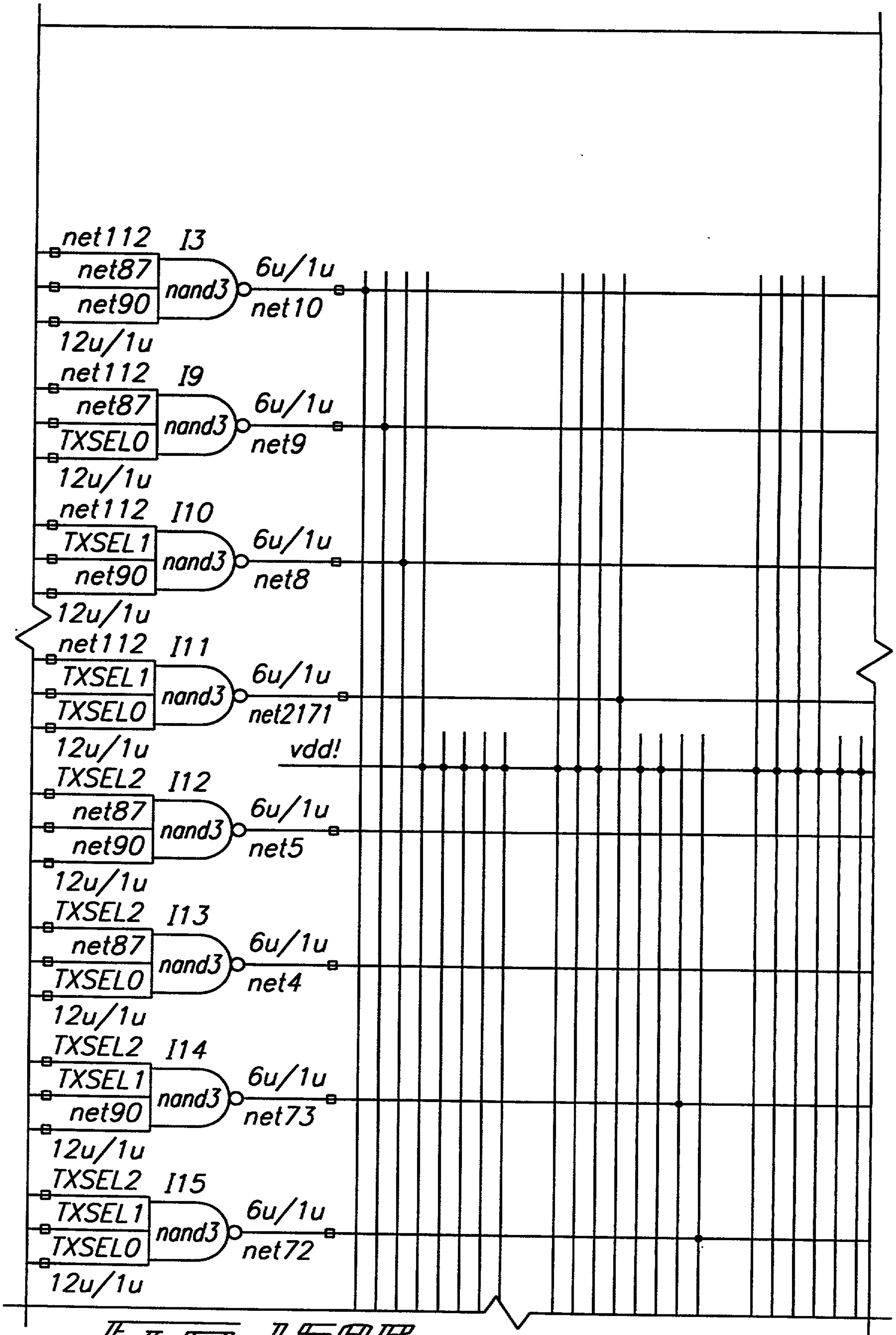

net112
I3
net87
nand3
net90
6u/1u
net10
12u/1u
net112
I9
net87
nand3
TXSEL0
6u/1u
net9
12u/1u
net112
I10
TXSEL1
nand3
net90
6u/1u
net8
12u/1u
net112
I11
TXSEL1
nand3
TXSEL0
6u/1u
net2171
12u/1u
vdd!
TXSEL2
I12
net87
nand3
net90
6u/1u
net5
12u/1u
TXSEL2
I13
net87
nand3
TXSEL0
6u/1u
net4
12u/1u
TXSEL2
I14
TXSEL1
nand3
net90
6u/1u
net73
12u/1u
TXSEL2
I15
TXSEL1
nand3
TXSEL0
6u/1u
net72
12u/1u

Fig 15AB

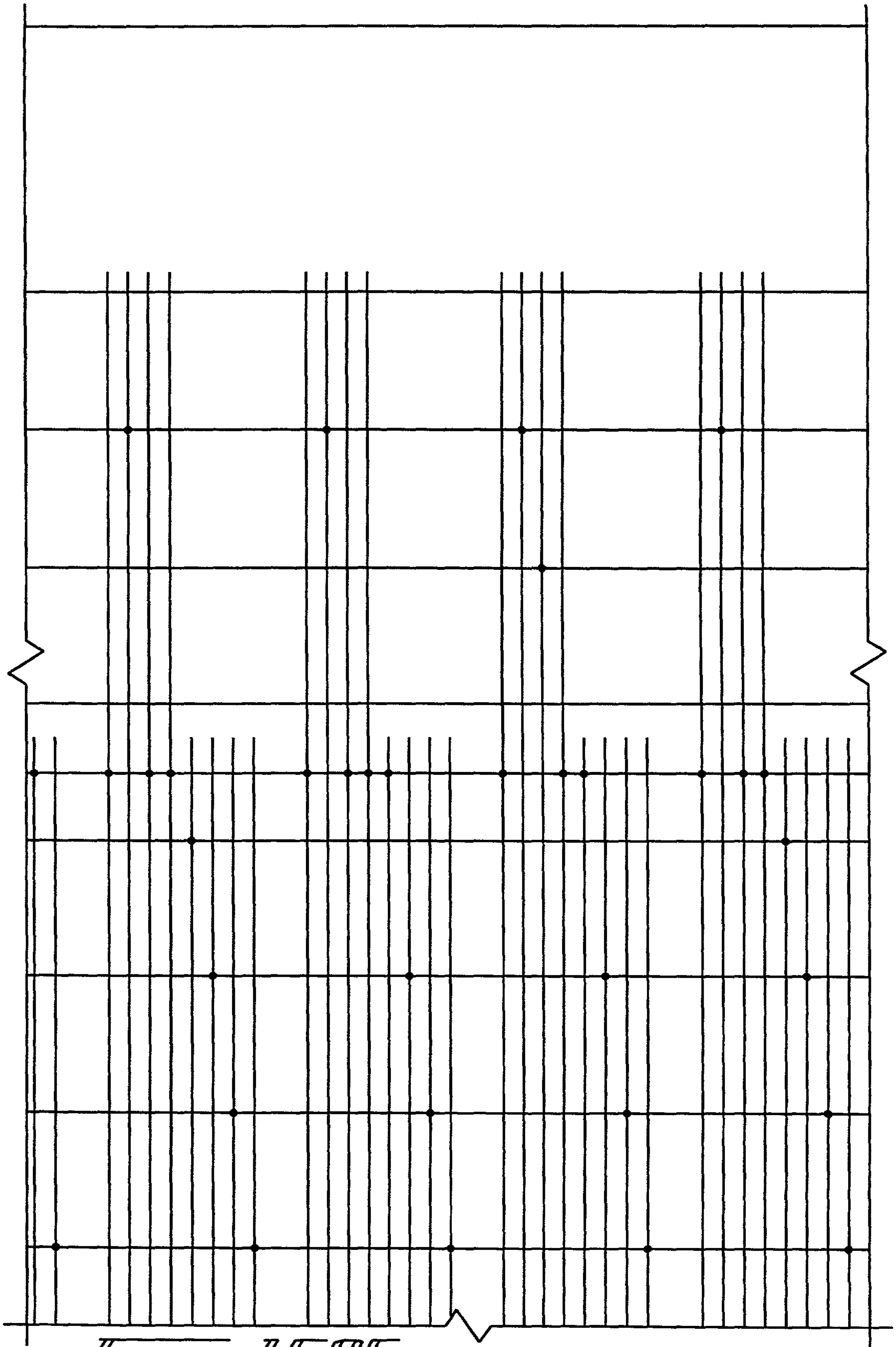


Fig 15AC

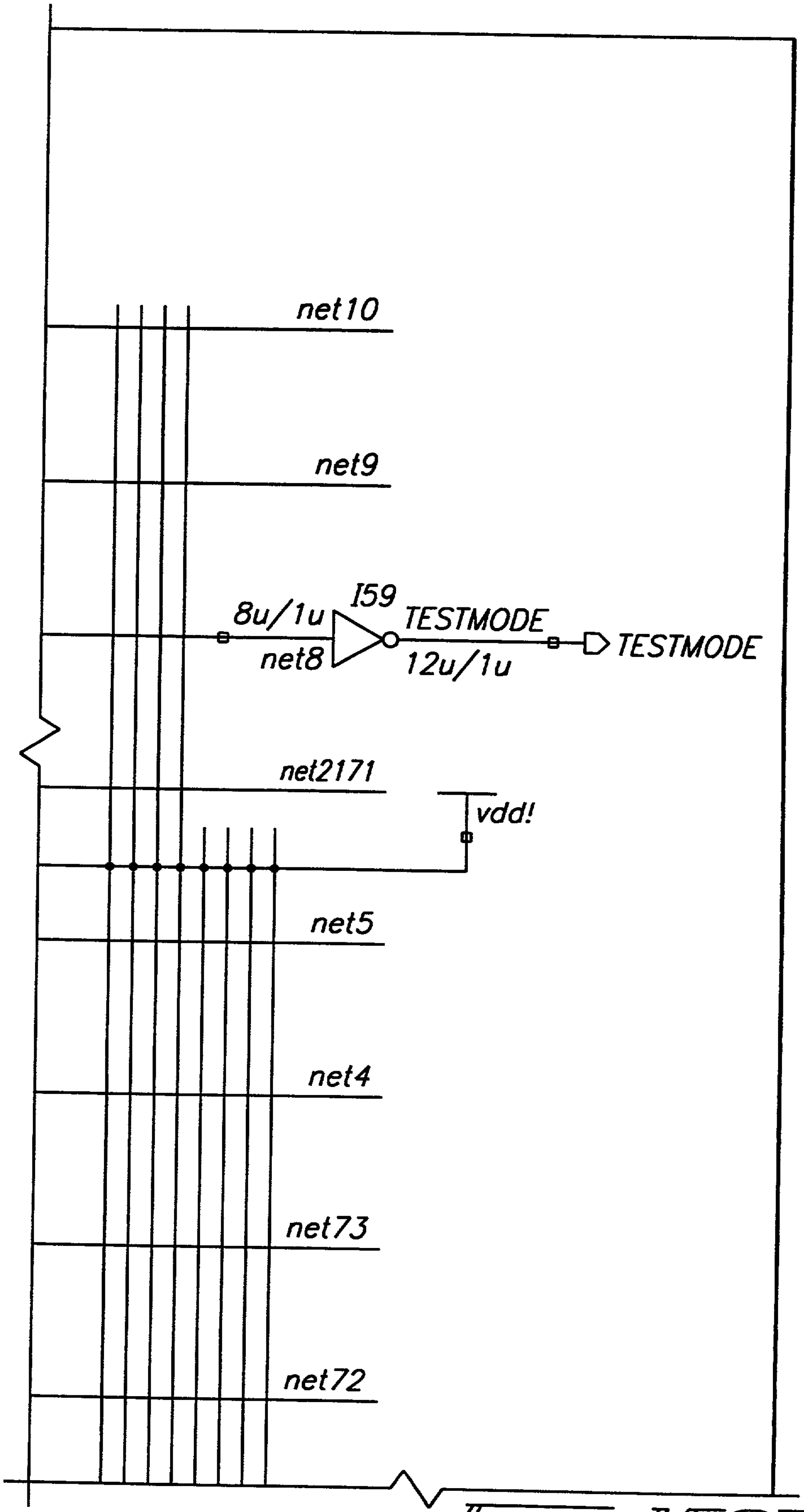

net10
net9
8u/1u
I59
TESTMODE
net8
12u/1u
TESTMODE
net2171
vdd!
net5
net4
net73
net72

Fig 15AD

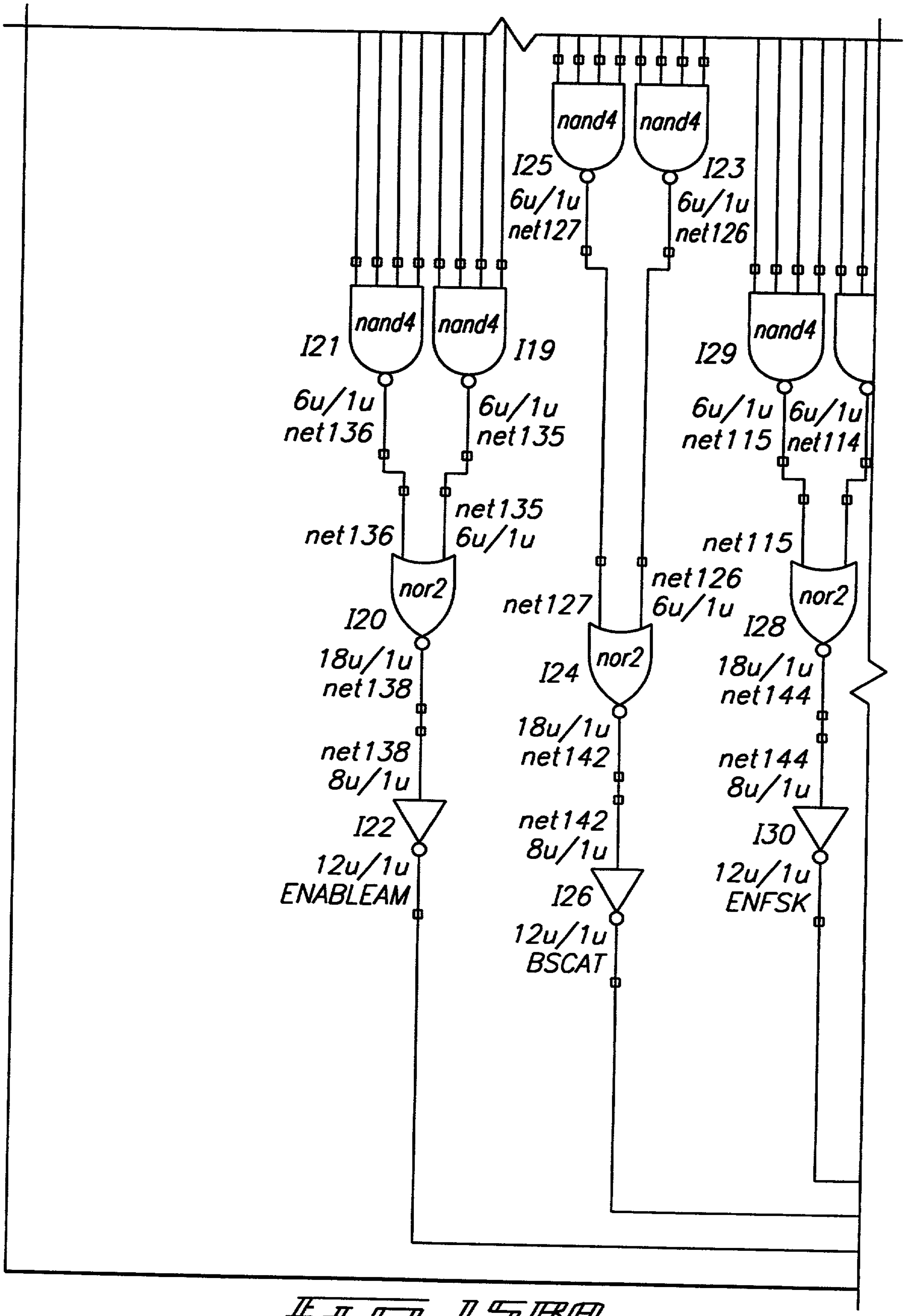

nand4
nand4
I25
6u/1u
net127
I23
6u/1u
net126
nand4
nand4
I21
I19
6u/1u
net136
6u/1u
net135
nand4
I29
6u/1u
net115
6u/1u
net114
net135
6u/1u
net136
nor2
I20
18u/1u
net138
net138
8u/1u
I22
12u/1u
ENABLEAM
net126
6u/1u
net127
nor2
I24
18u/1u
net142
net142
8u/1u
I26
12u/1u
BSCAT
net115
nor2
I28
18u/1u
net144
net144
8u/1u
I30
12u/1u
ENFSK

Fig 15BA

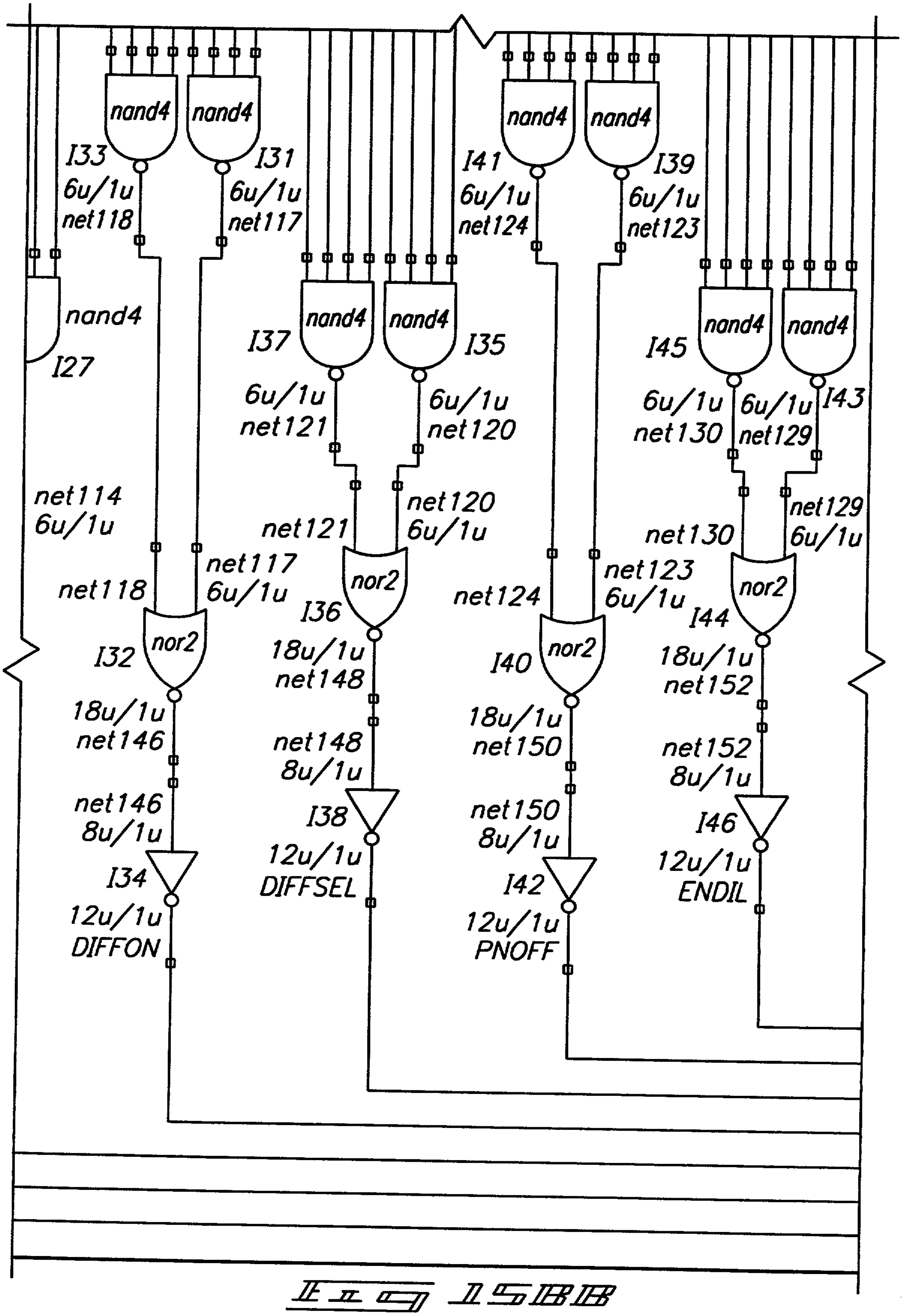

nand4
nand4
I33
6u/1u
net118
I31
6u/1u
net117
nand4
nand4
I41
6u/1u
net124
I39
6u/1u
net123
nand4
I27
nand4
nand4
I37
I35
6u/1u
net121
6u/1u
net120
nand4
nand4
I45
I43
6u/1u
net130
6u/1u
net129
net114
6u/1u
net121
net120
6u/1u
net130
net129
6u/1u
net118
net117
6u/1u
nor2
I36
net124
net123
6u/1u
nor2
I44
nor2
I32
18u/1u
net148
nor2
I40
18u/1u
net152
18u/1u
net146
net148
8u/1u
18u/1u
net150
net152
8u/1u
net146
8u/1u
I38
12u/1u
DIFFSEL
net150
8u/1u
I46
12u/1u
ENDIL
I34
12u/1u
DIFFON
I42
12u/1u
PNOFF

Fig 15BB

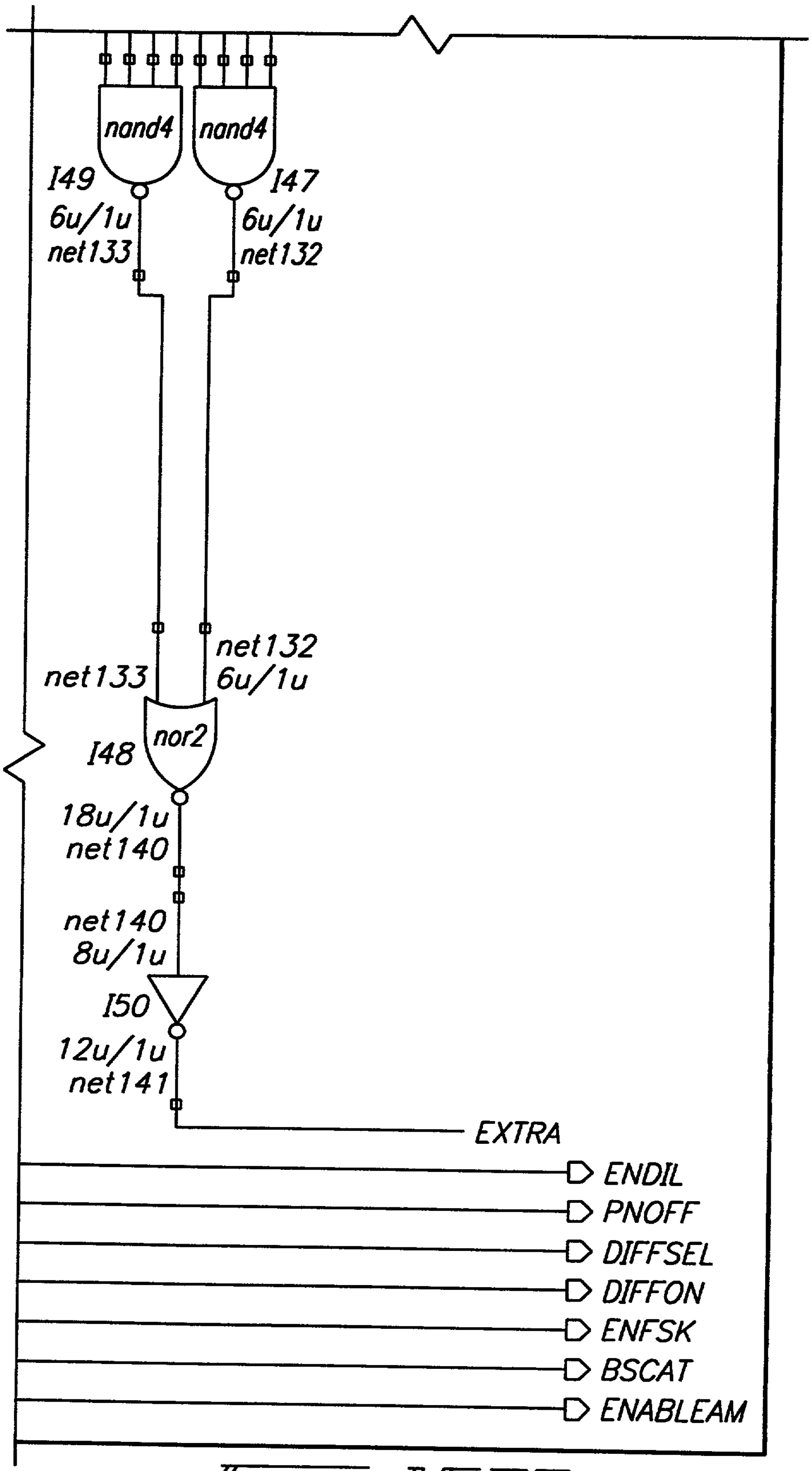
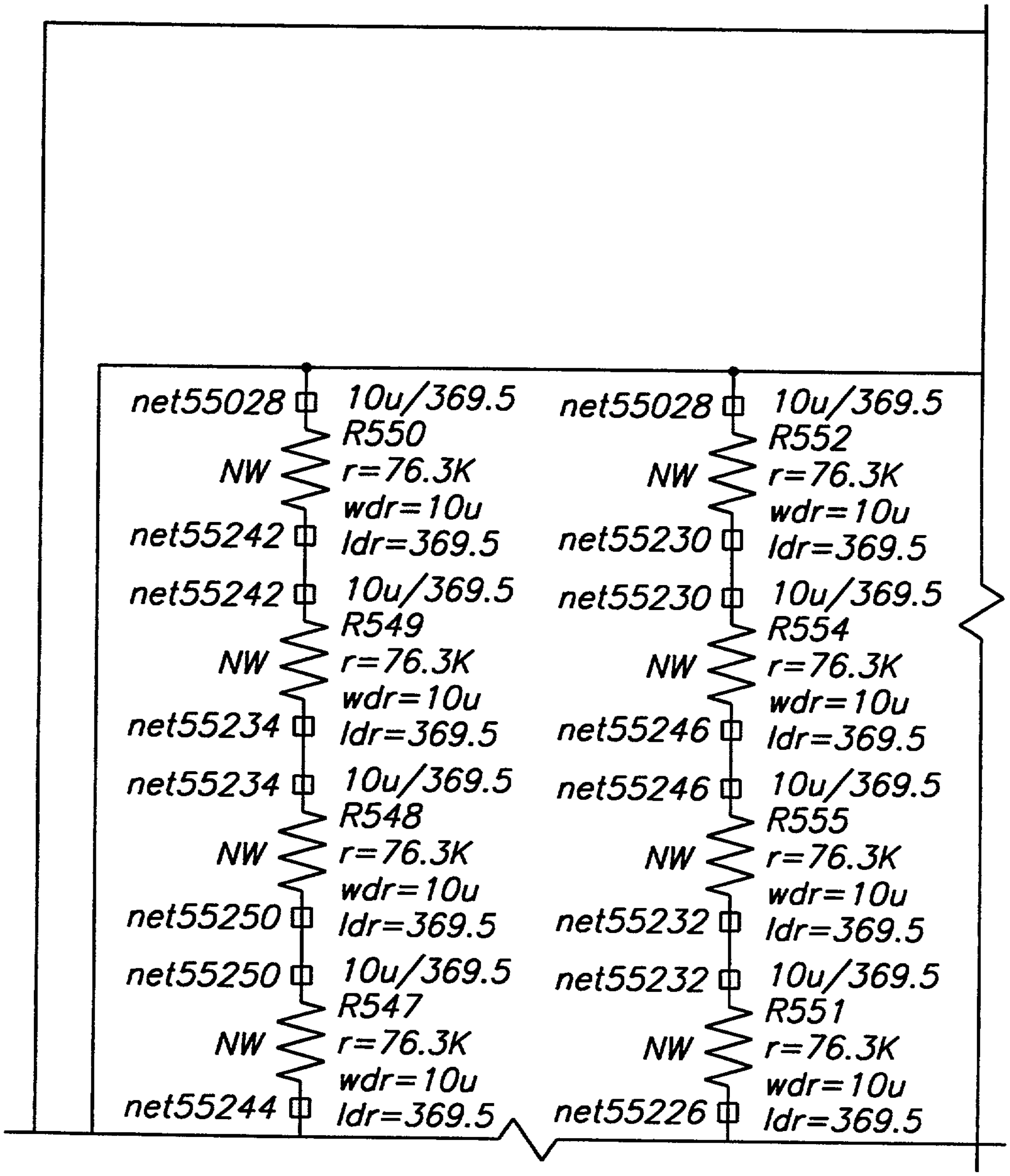

nand4
nand4
I49
6u/1u
net133
I47
6u/1u
net132
net133
net132
6u/1u
nor2
I48
18u/1u
net140
net140
8u/1u
I50
12u/1u
net141
EXTRA
ENDIL
PNOFF
DIFFSEL
DIFFON
ENFSK
BSCAT
ENABLEAM

Fig 15BC

16AA	16AB	16AC	16AD	16AE	16AF	16AG	16AH
16BA	16BB	16BC	16BD	16BE	16BF	16BG	16BH
16CA	16CB	16CC	16CD	16CE	16CF	16CG	16CH
16DA	16DB	16DC	16DD	16DE	16DF	16DG	16DH
16EA	16EB	16EC	16ED	16EE	16EF	16EG	16EH

Fig 16



net55028
10u/369.5
R550
NW
r=76.3K
wdr=10u
net55242
ldr=369.5
net55242
10u/369.5
R549
NW
r=76.3K
wdr=10u
net55234
ldr=369.5
net55234
10u/369.5
R548
NW
r=76.3K
wdr=10u
net55250
ldr=369.5
net55250
10u/369.5
R547
NW
r=76.3K
wdr=10u
net55244
ldr=369.5
net55028
10u/369.5
R552
NW
r=76.3K
wdr=10u
net55230
ldr=369.5
net55230
10u/369.5
R554
NW
r=76.3K
wdr=10u
net55246
ldr=369.5
net55246
10u/369.5
R555
NW
r=76.3K
wdr=10u
net55232
ldr=369.5
net55232
10u/369.5
R551
NW
r=76.3K
wdr=10u
net55226
ldr=369.5

Fig 16AA

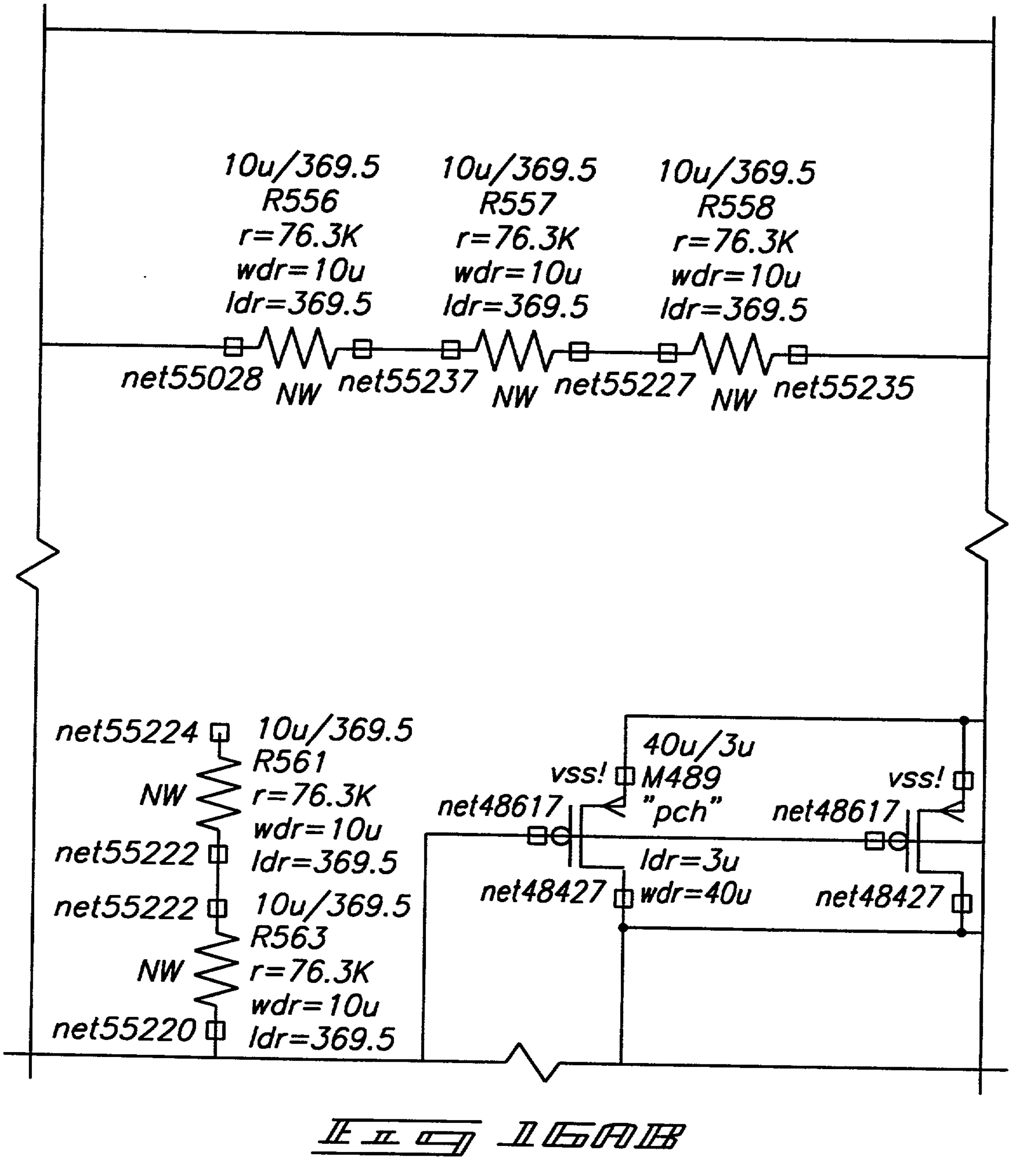

10u/369.5
R556
r=76.3K
wdr=10u
ldr=369.5
10u/369.5
R557
r=76.3K
wdr=10u
ldr=369.5
10u/369.5
R558
r=76.3K
wdr=10u
ldr=369.5
net55028
NW
net55237
NW
net55227
NW
net55235
net55224
10u/369.5
R561
NW
r=76.3K
wdr=10u
net55222
ldr=369.5
net55222
10u/369.5
R563
NW
r=76.3K
wdr=10u
net55220
ldr=369.5
40u/3u
vss!
M489
"pch"
net48617
ldr=3u
net48427
wdr=40u
vss!
net48617
net48427

Fig 16AB

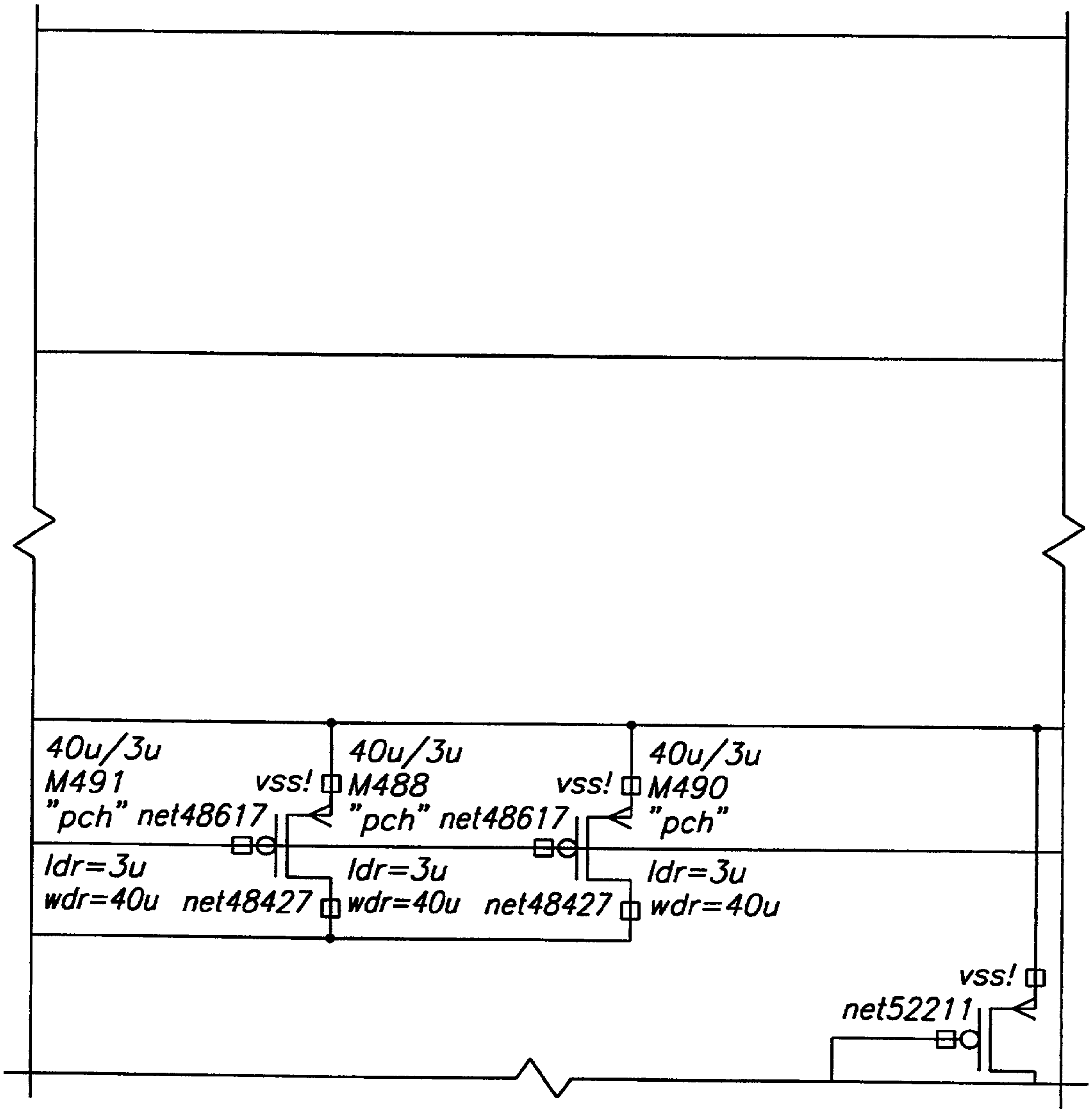

40u/3u
M491
"pch"
net48617
vss!
ldr=3u
wdr=40u
net48427
40u/3u
M488
"pch"
net48617
vss!
ldr=3u
wdr=40u
net48427
40u/3u
M490
"pch"
ldr=3u
wdr=40u
vss!
net52211

Fig 16AC

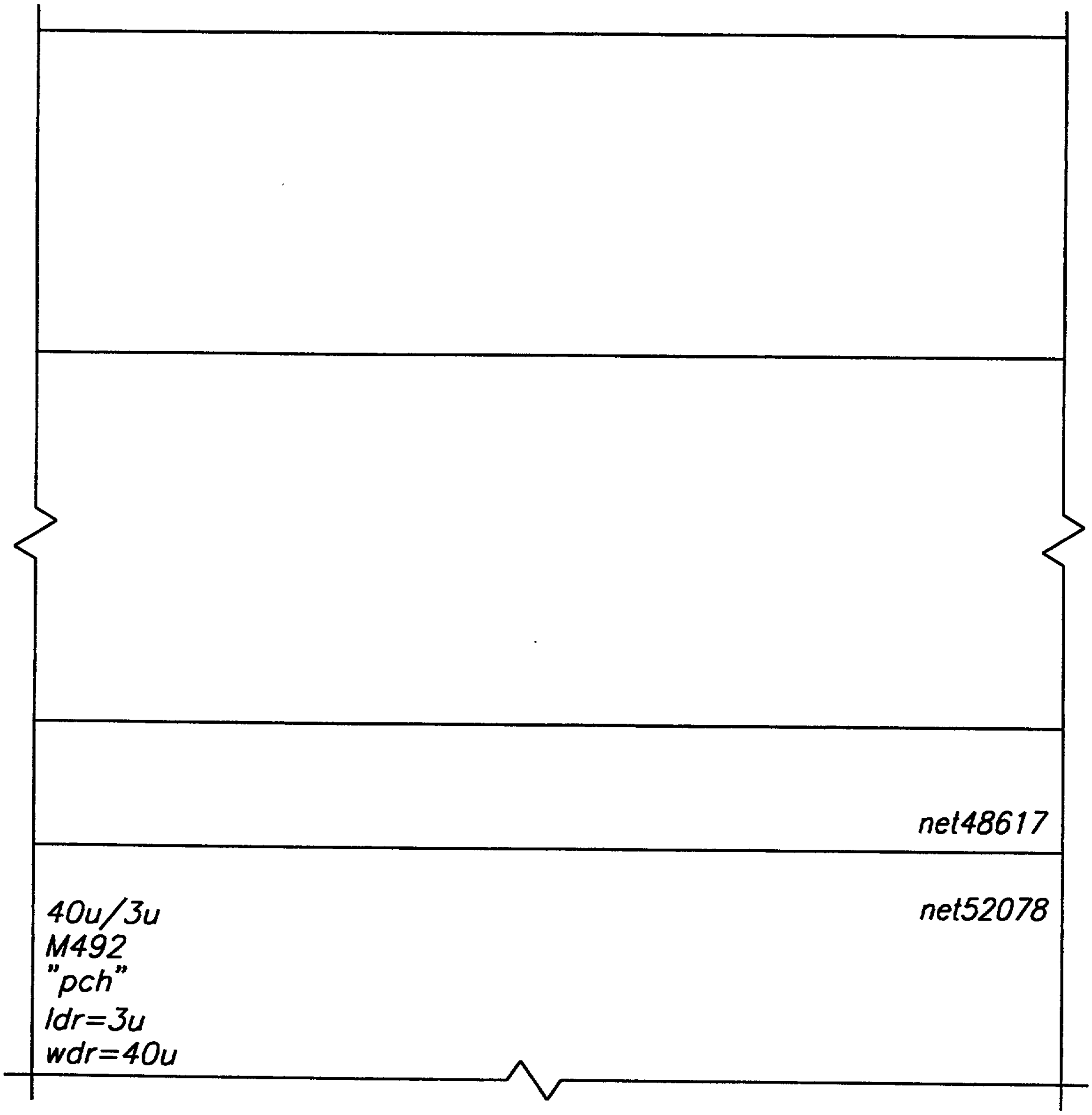


Fig 16AD

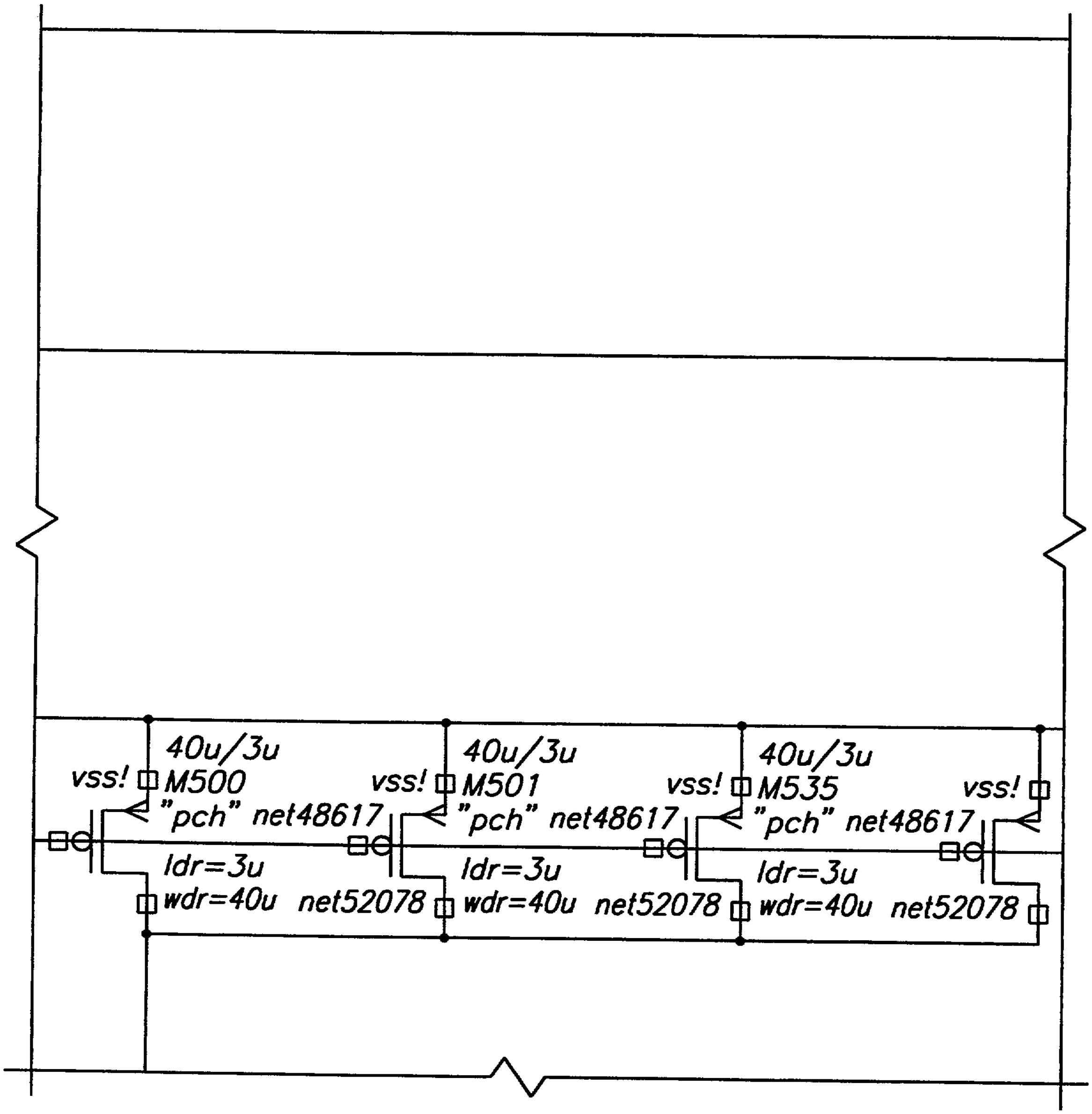

40u/3u
vss!
M500
"pch"
net48617
ldr=3u
wdr=40u
net52078
40u/3u
vss!
M501
"pch"
net48617
ldr=3u
wdr=40u
net52078
40u/3u
vss!
M535
"pch"
net48617
ldr=3u
wdr=40u
net52078
vss!

Fig 16AE

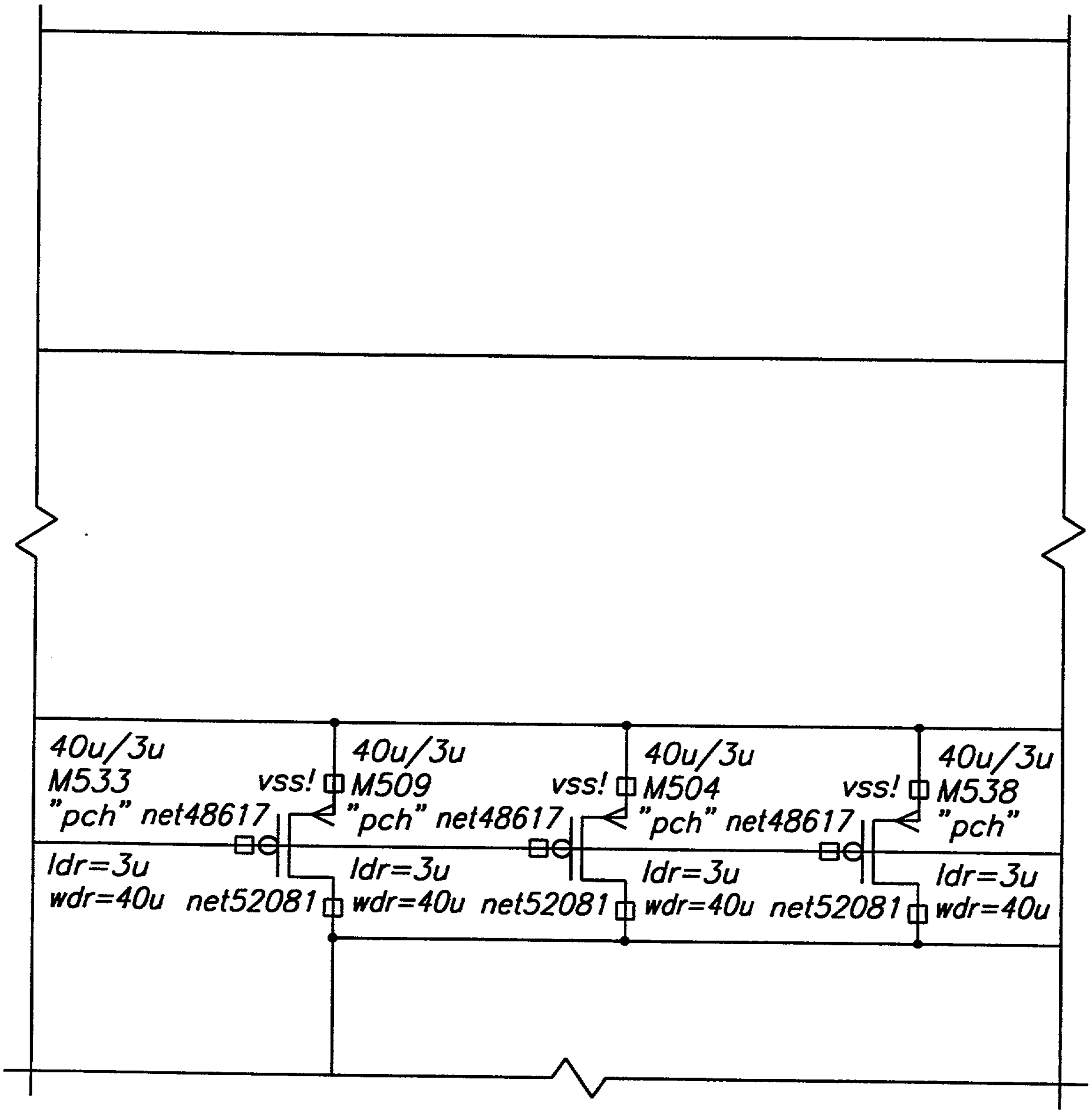

40u/3u
M533
"pch"
net48617
ldr=3u
wdr=40u
net52081
vss!
40u/3u
M509
"pch"
net48617
ldr=3u
wdr=40u
net52081
vss!
40u/3u
M504
"pch"
net48617
ldr=3u
wdr=40u
net52081
vss!
40u/3u
M538
"pch"
ldr=3u
wdr=40u

Fig 16AF

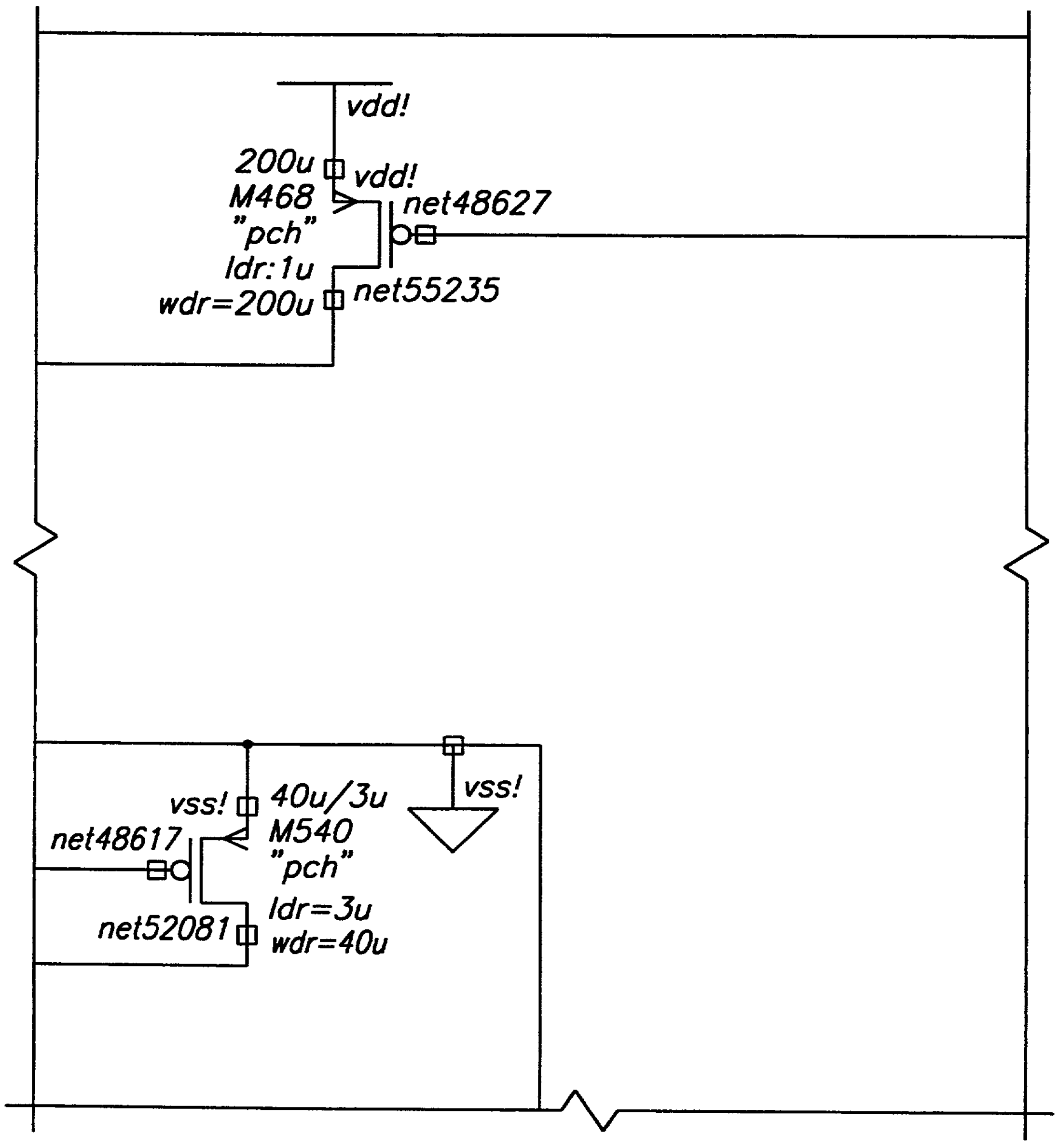

vdd!
200u
M468
"pch"
ldr:1u
wdr=200u
vdd!
net48627
net55235
vss!
net48617
net52081
40u/3u
M540
"pch"
ldr=3u
wdr=40u
vss!

Fig 16AG

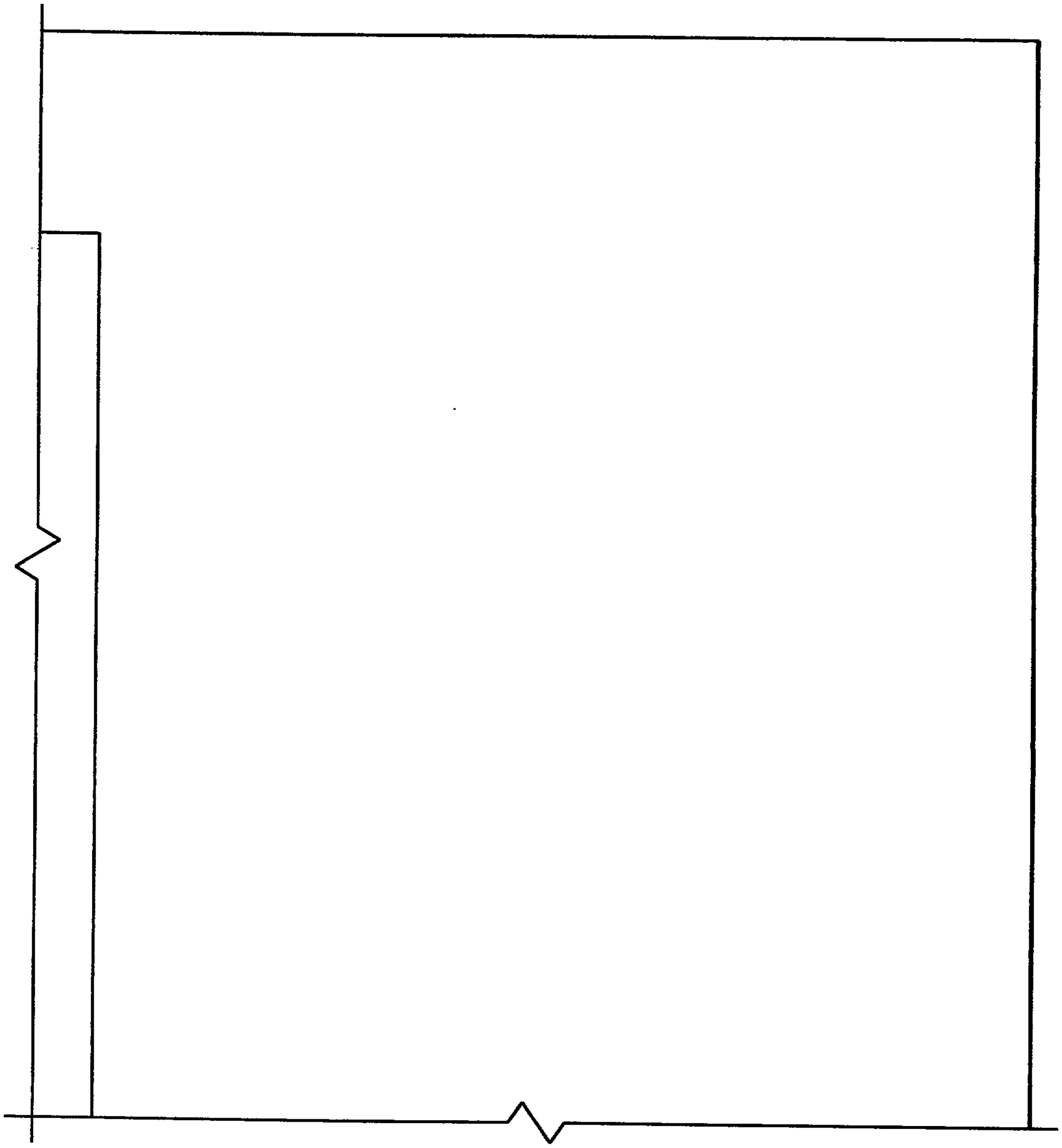


Fig. 16AH

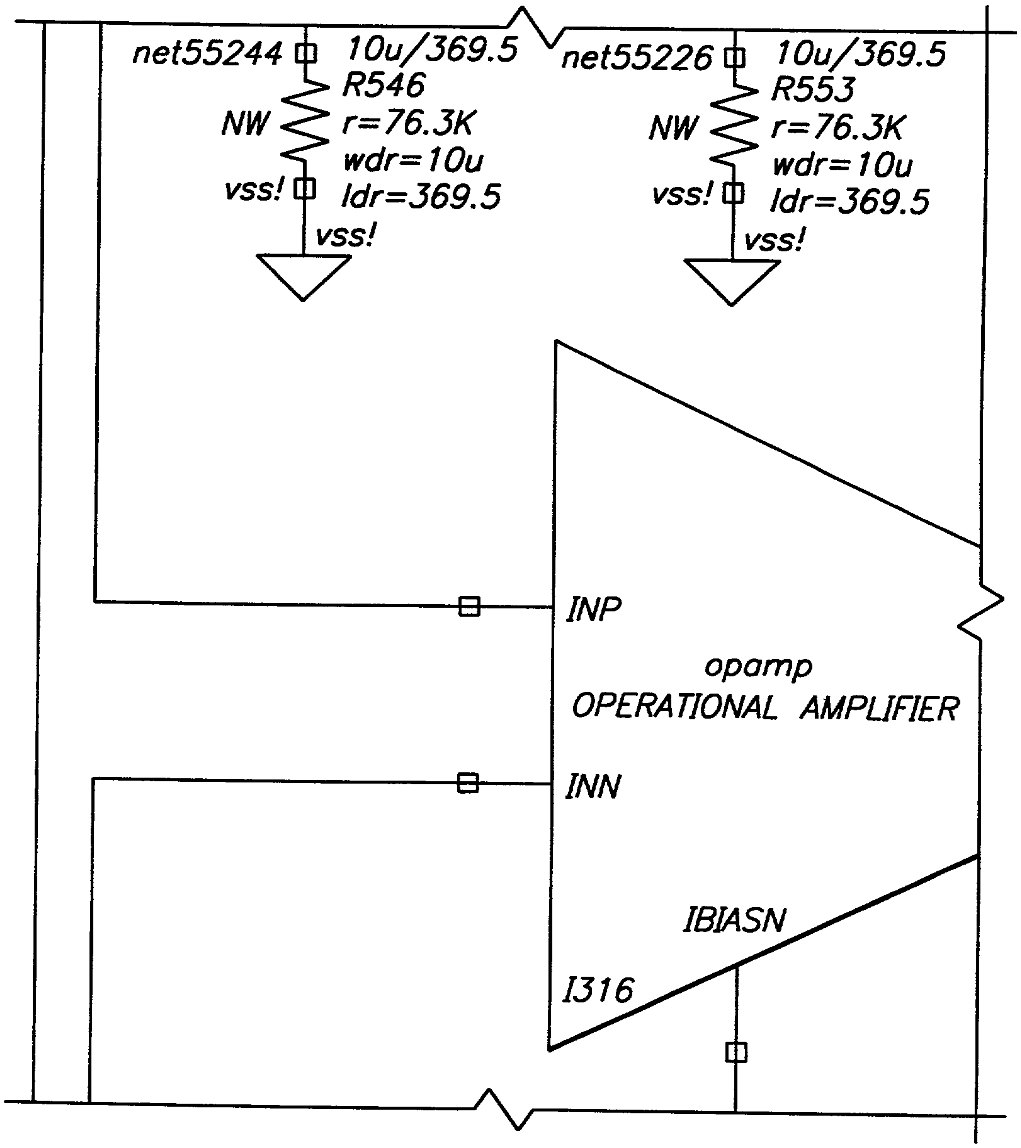

net55244
10u/369.5
R546
NW
r=76.3K
wdr=10u
vss!
ldr=369.5
vss!
net55226
10u/369.5
R553
NW
r=76.3K
wdr=10u
vss!
ldr=369.5
vss!
INP
opamp
OPERATIONAL AMPLIFIER
INN
IBIASN
I316

FIG 16BA

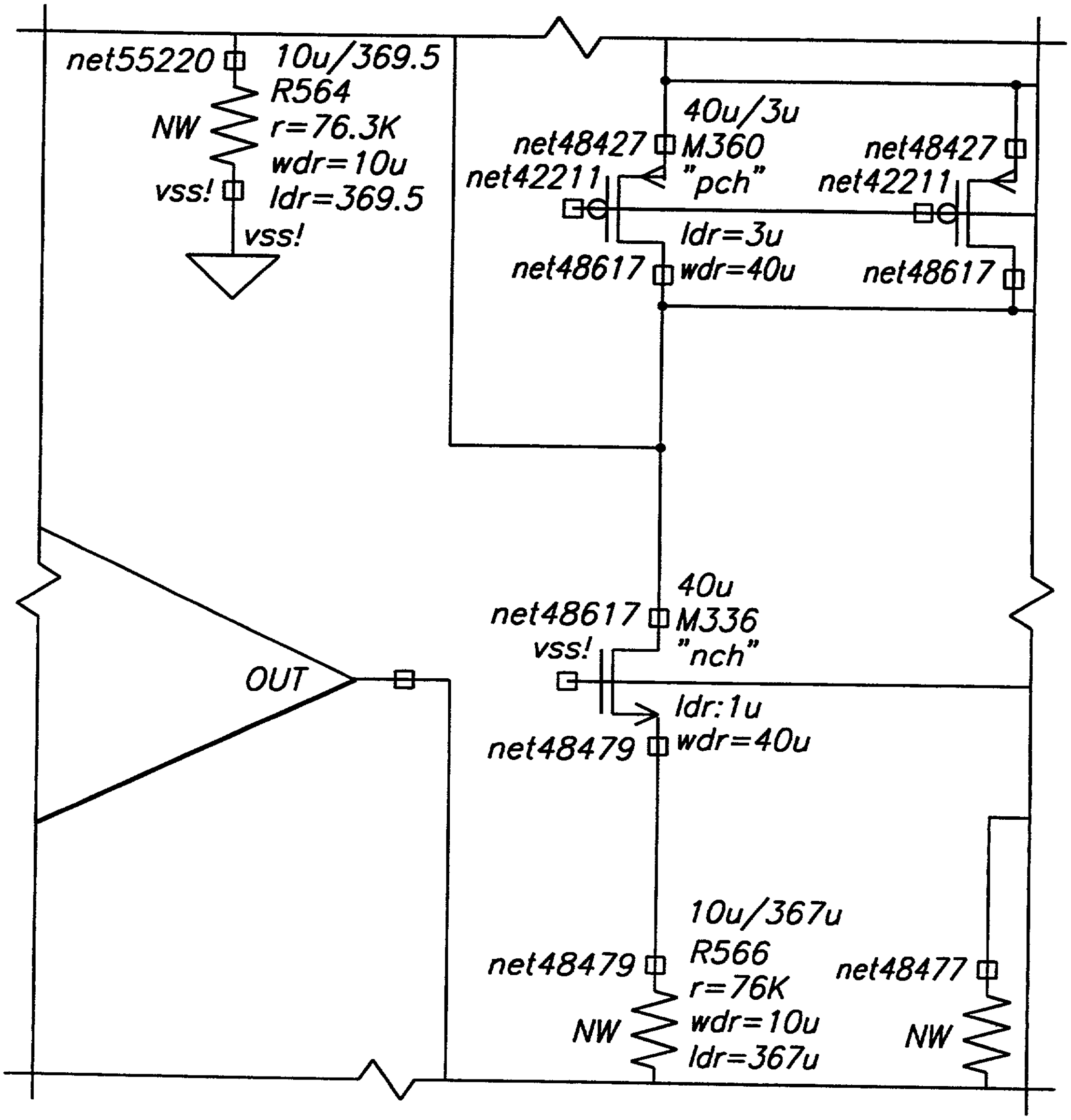

net55220
10u/369.5
R564
NW
r=76.3K
wdr=10u
vss!
ldr=369.5
vss!
40u/3u
net48427
M360
"pch"
net42211
net48427
net42211
ldr=3u
net48617
wdr=40u
net48617
OUT
40u
net48617
M336
vss!
"nch"
ldr:1u
net48479
wdr=40u
10u/367u
R566
net48479
r=76K
net48477
NW
wdr=10u
NW
ldr=367u

Fig 16BB

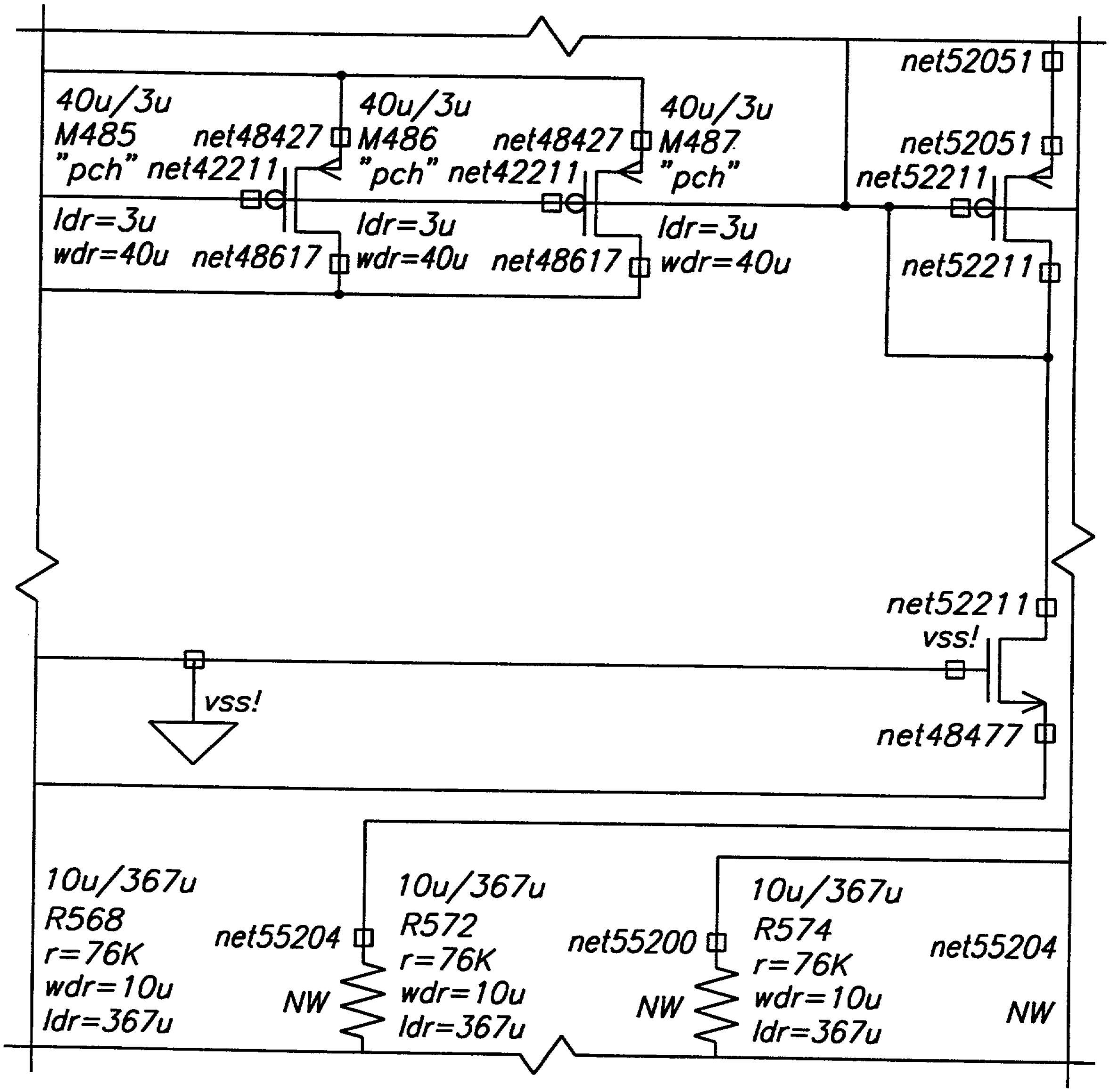

40u/3u
M485
"pch"
net48427
net42211
ldr=3u
wdr=40u
net48617
40u/3u
M486
"pch"
net48427
net42211
ldr=3u
wdr=40u
net48617
40u/3u
M487
"pch"
ldr=3u
wdr=40u
net52051
net52051
net52211
net52211
net52211
vss!
vss!
net48477
10u/367u
R568
r=76K
wdr=10u
ldr=367u
net55204
NW
10u/367u
R572
r=76K
wdr=10u
ldr=367u
net55200
NW
10u/367u
R574
r=76K
wdr=10u
ldr=367u
net55204
NW

Fig 16BC

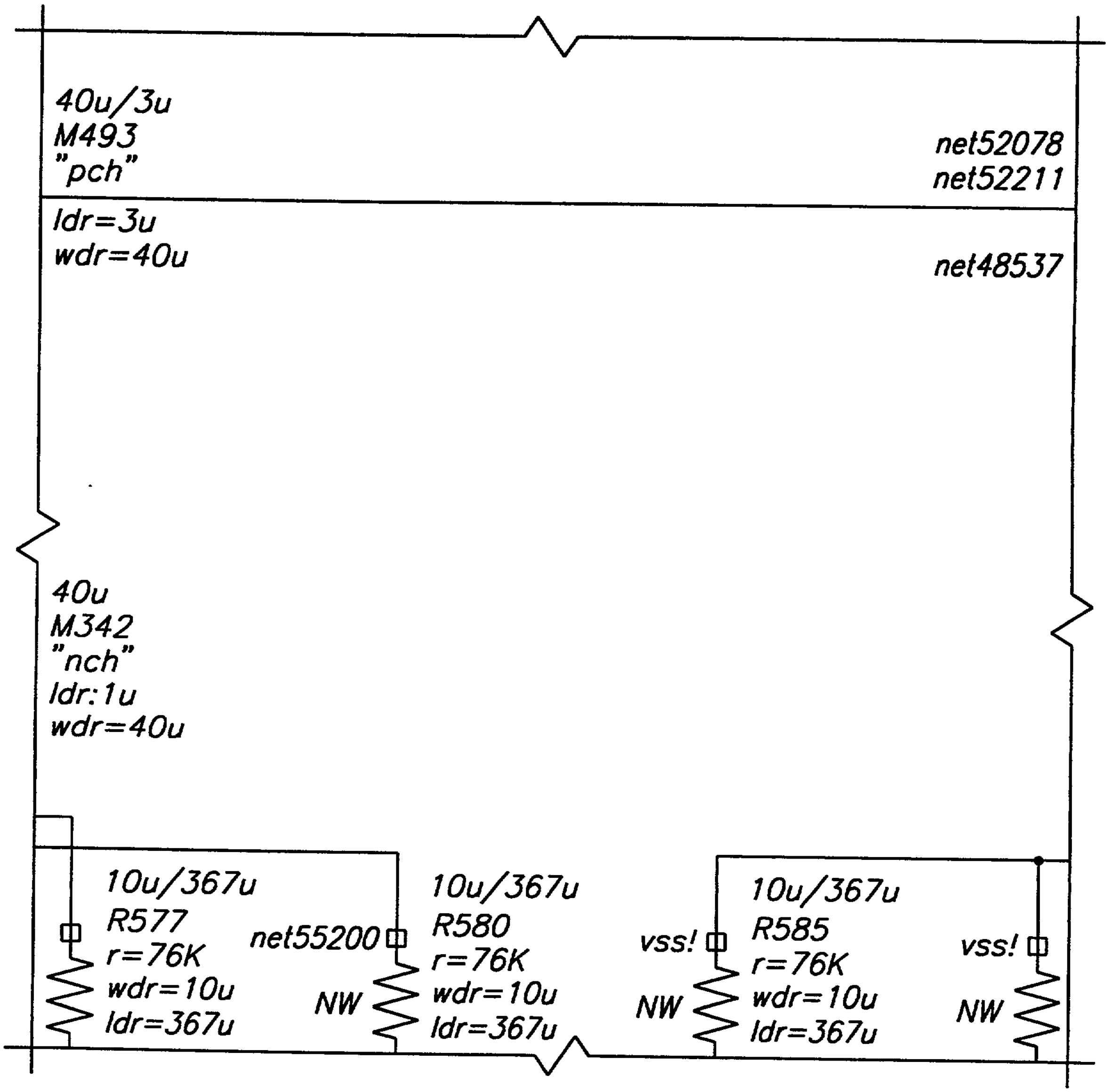

40u/3u
M493
"pch"
ldr=3u
wdr=40u
net52078
net52211
net48537
40u
M342
"nch"
ldr:1u
wdr=40u
10u/367u
R577
r=76K
wdr=10u
ldr=367u
net55200
NW
10u/367u
R580
r=76K
wdr=10u
ldr=367u
vss!
NW
10u/367u
R585
r=76K
wdr=10u
ldr=367u
vss!
NW

Fig 16BD

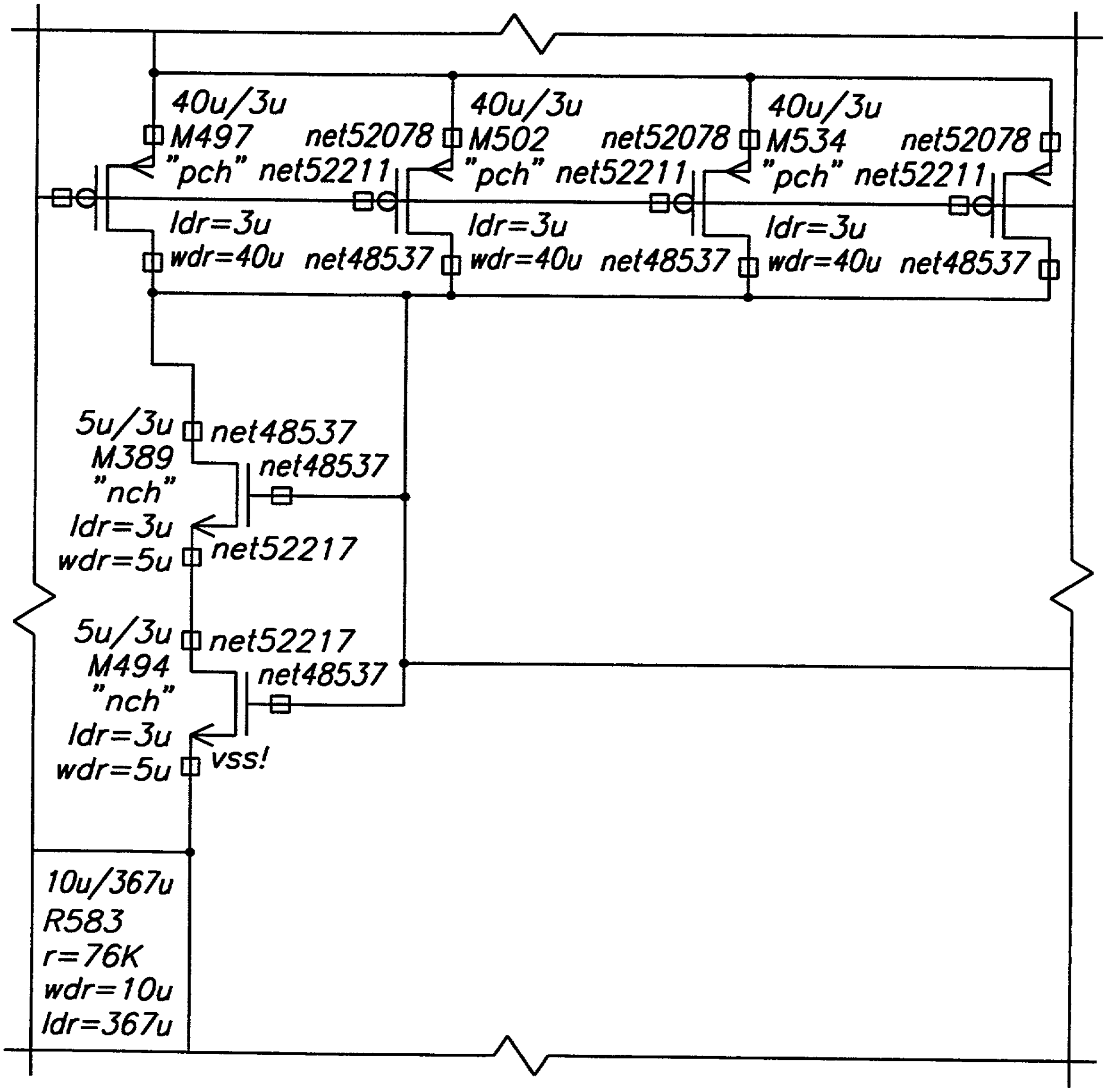

40u/3u
M497
"pch"
ldr=3u
wdr=40u
net52078
net52211
net48537
40u/3u
M502
"pch"
ldr=3u
wdr=40u
net52078
net52211
net48537
40u/3u
M534
"pch"
ldr=3u
wdr=40u
net52078
net52211
net48537
5u/3u
M389
"nch"
ldr=3u
wdr=5u
net48537
net48537
net52217
5u/3u
M494
"nch"
ldr=3u
wdr=5u
net52217
net48537
vss!
10u/367u
R583
r=76K
wdr=10u
ldr=367u

Fig 16BE

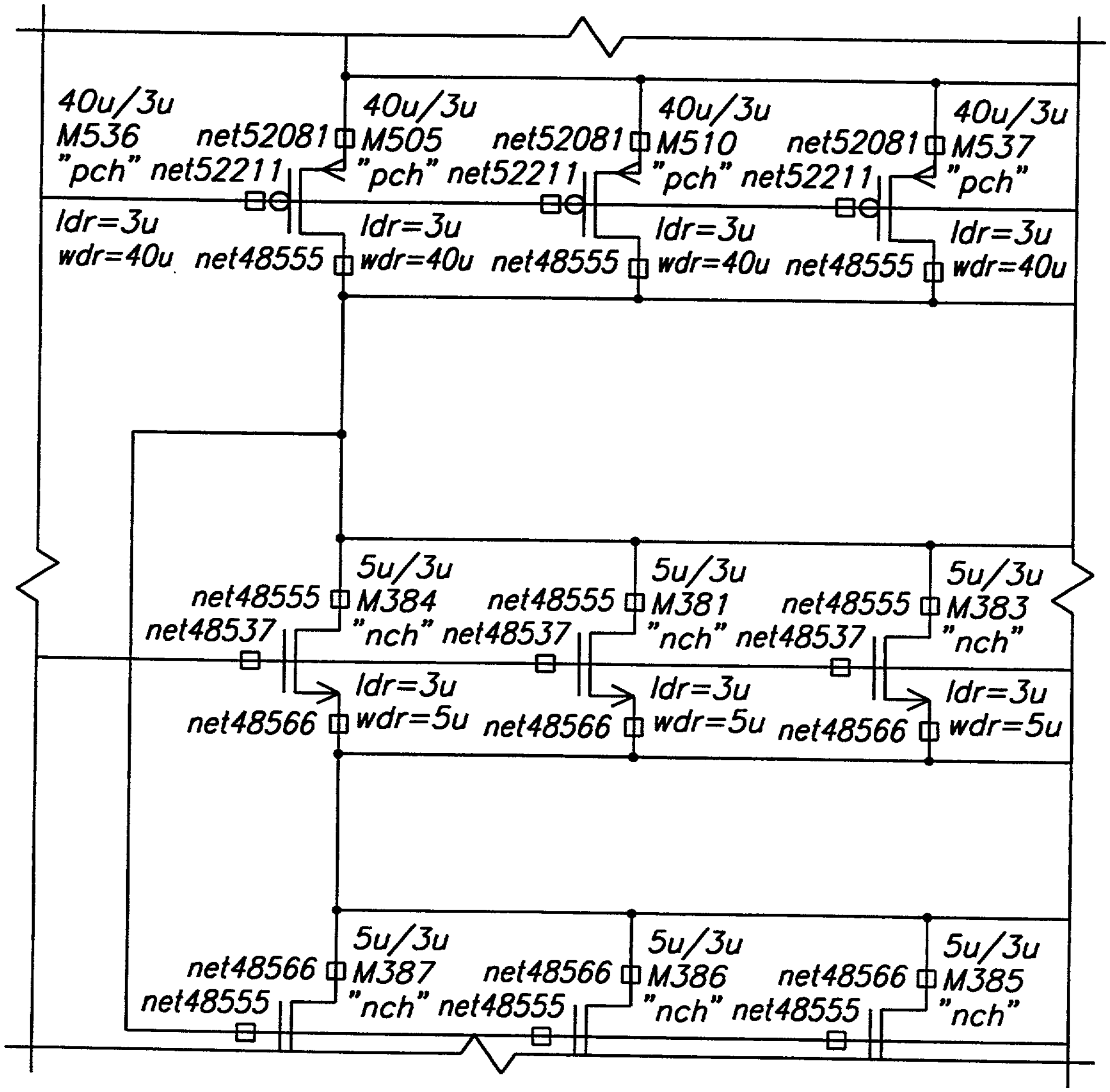

40u/3u
M536
"pch"
net52081
net52211
ldr=3u
wdr=40u
net48555
40u/3u
M505
"pch"
net52081
net52211
ldr=3u
wdr=40u
net48555
40u/3u
M510
"pch"
net52081
net52211
ldr=3u
wdr=40u
net48555
40u/3u
M537
"pch"
ldr=3u
wdr=40u
net48555
net48537
5u/3u
M384
"nch"
ldr=3u
wdr=5u
net48566
net48537
5u/3u
M381
"nch"
ldr=3u
wdr=5u
net48566
net48537
5u/3u
M383
"nch"
ldr=3u
wdr=5u
net48566
net48555
net48566
5u/3u
M387
"nch"
net48555
net48566
5u/3u
M386
"nch"
net48555
net48566
5u/3u
M385
"nch"

Fig 16BF

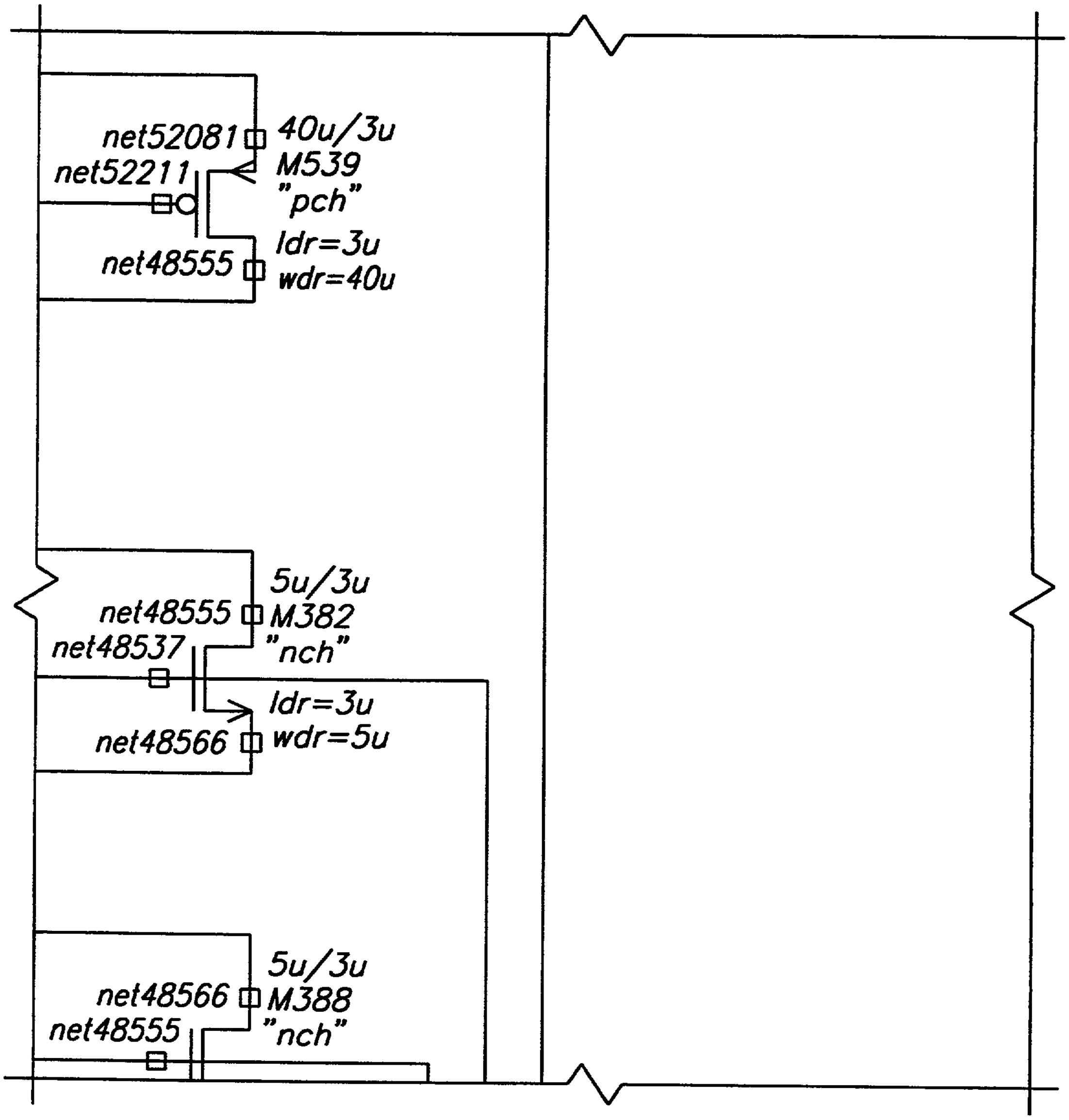

net52081
40u/3u
M539
"pch"
net52211
net48555
ldr=3u
wdr=40u
net48555
5u/3u
M382
"nch"
net48537
ldr=3u
wdr=5u
net48566
net48566
5u/3u
M388
"nch"
net48555

Fig 16BG

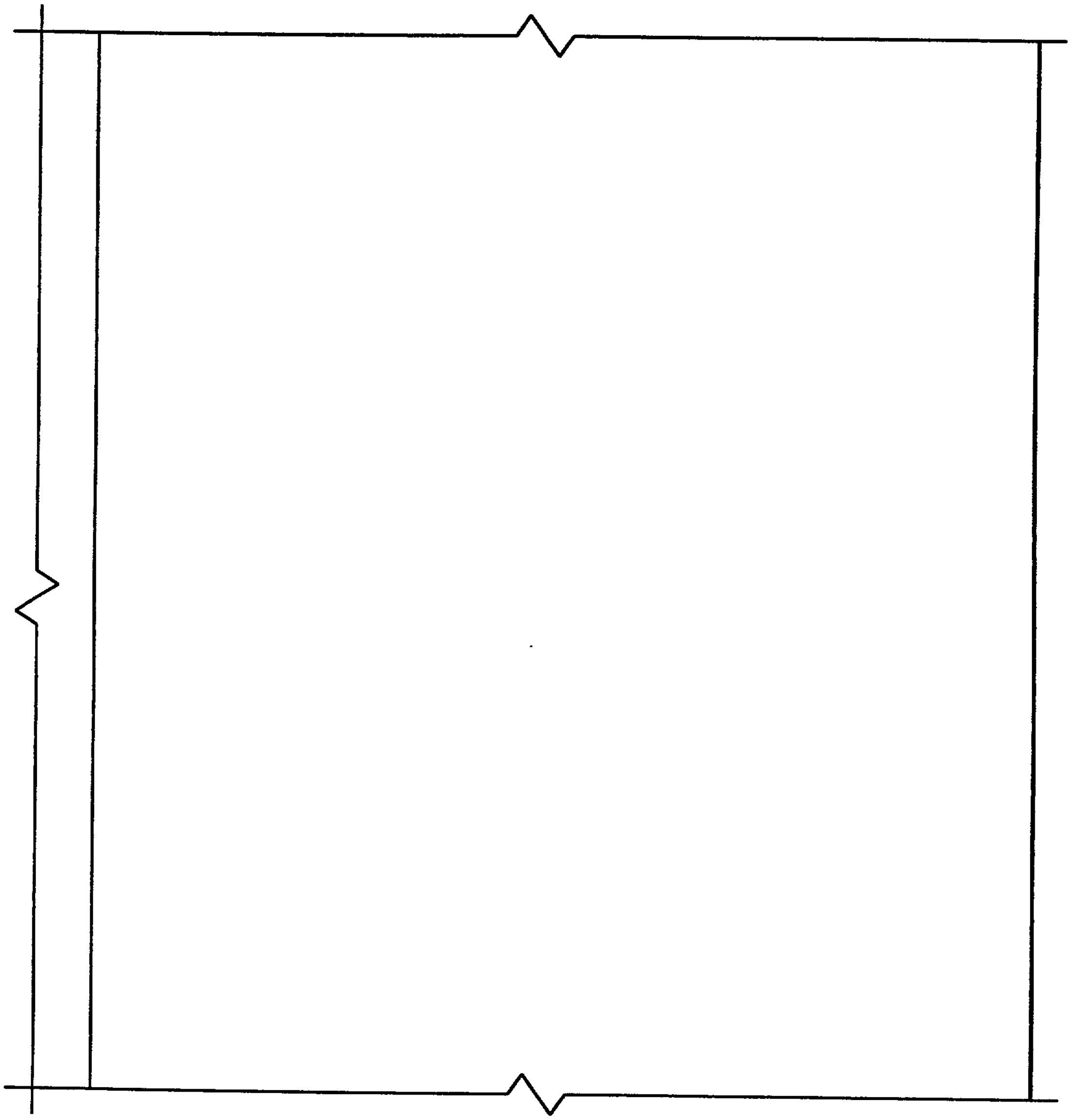


Fig 16BH

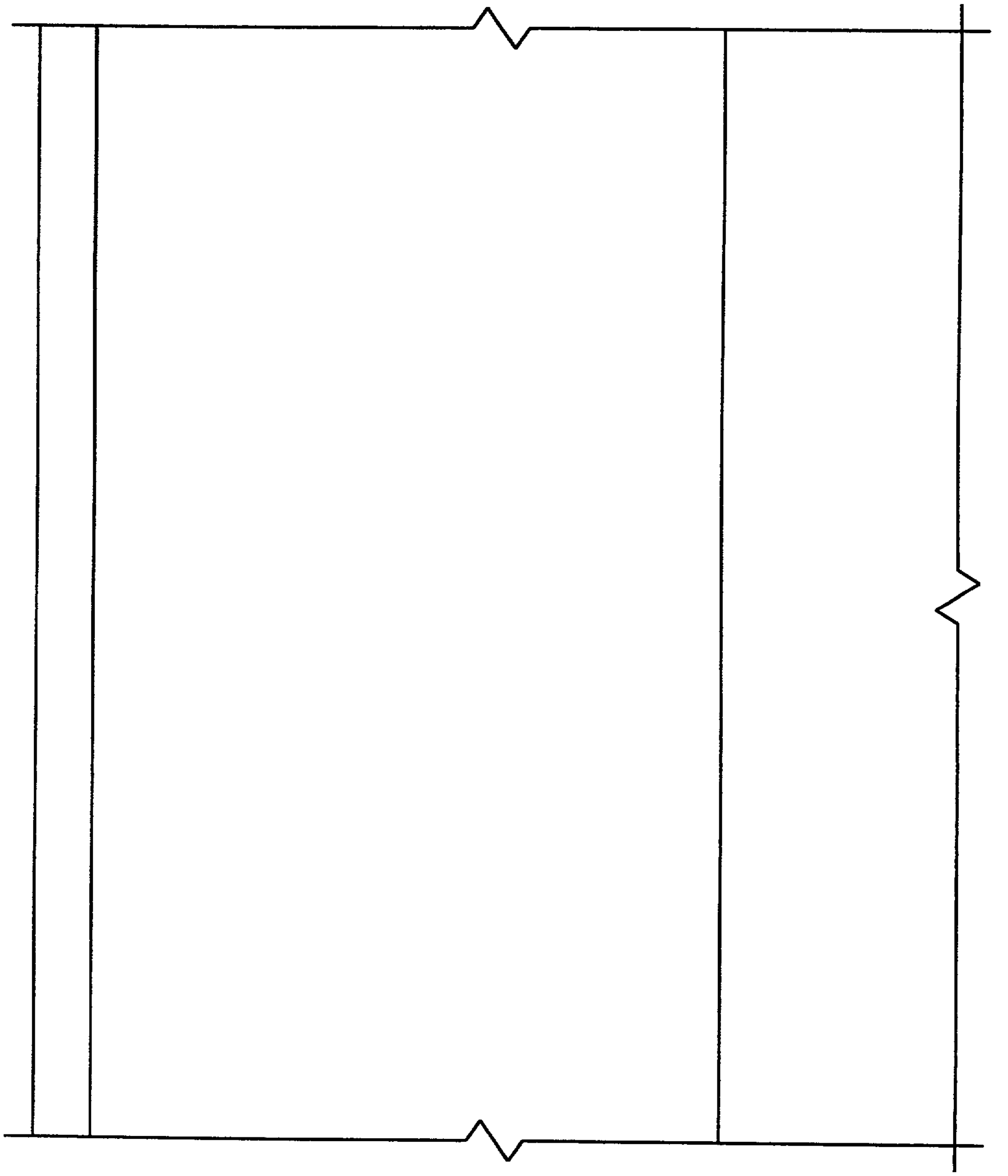


Fig 16CA

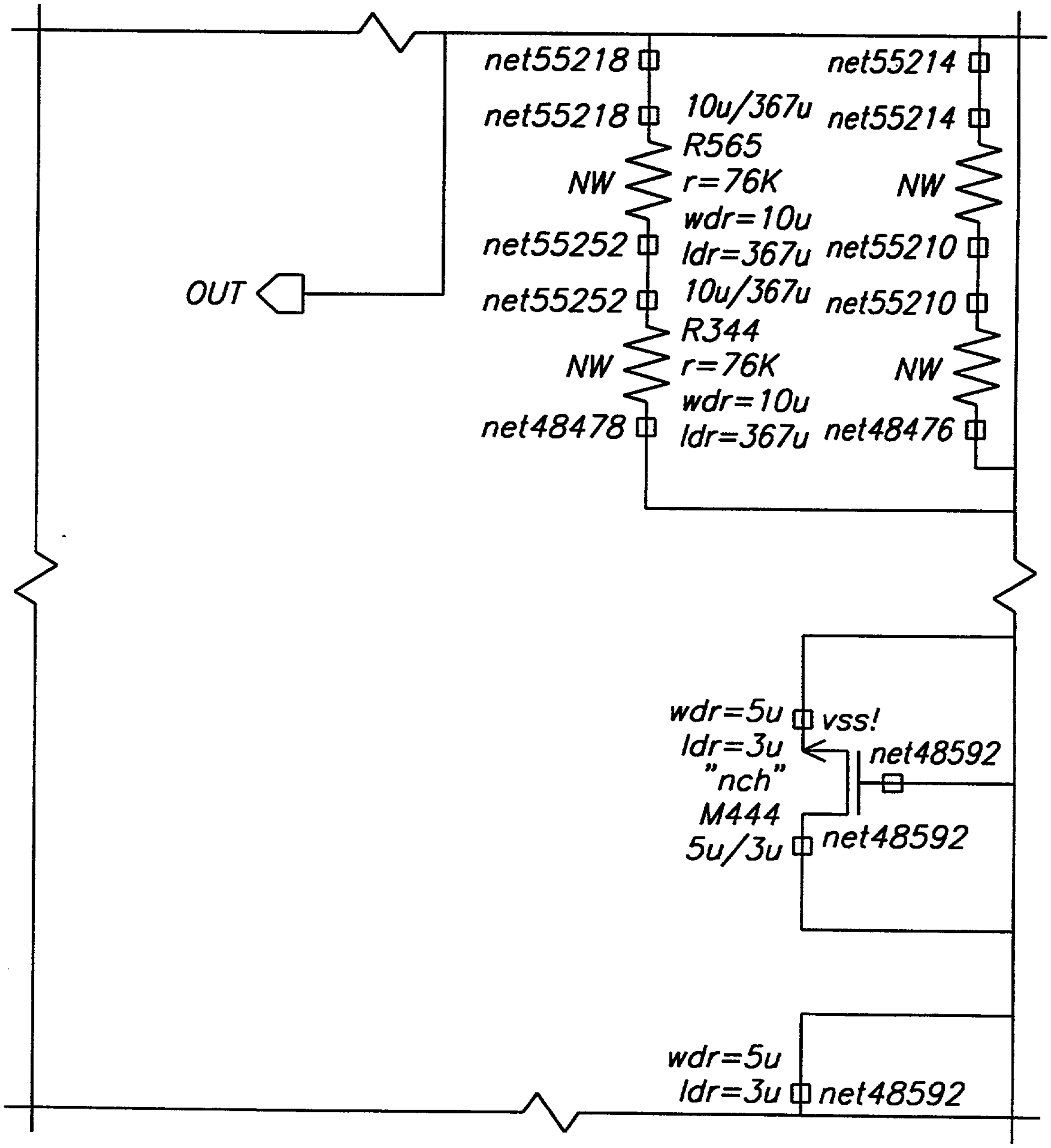

net55218
net55218
10u/367u
R565
r=76K
wdr=10u
ldr=367u
NW
net55252
net55252
10u/367u
R344
r=76K
wdr=10u
ldr=367u
NW
net48478
net55214
net55214
NW
net55210
net55210
NW
net48476
OUT
wdr=5u
ldr=3u
"nch"
M444
5u/3u
vss!
net48592
net48592
wdr=5u
ldr=3u
net48592

Fig 16B

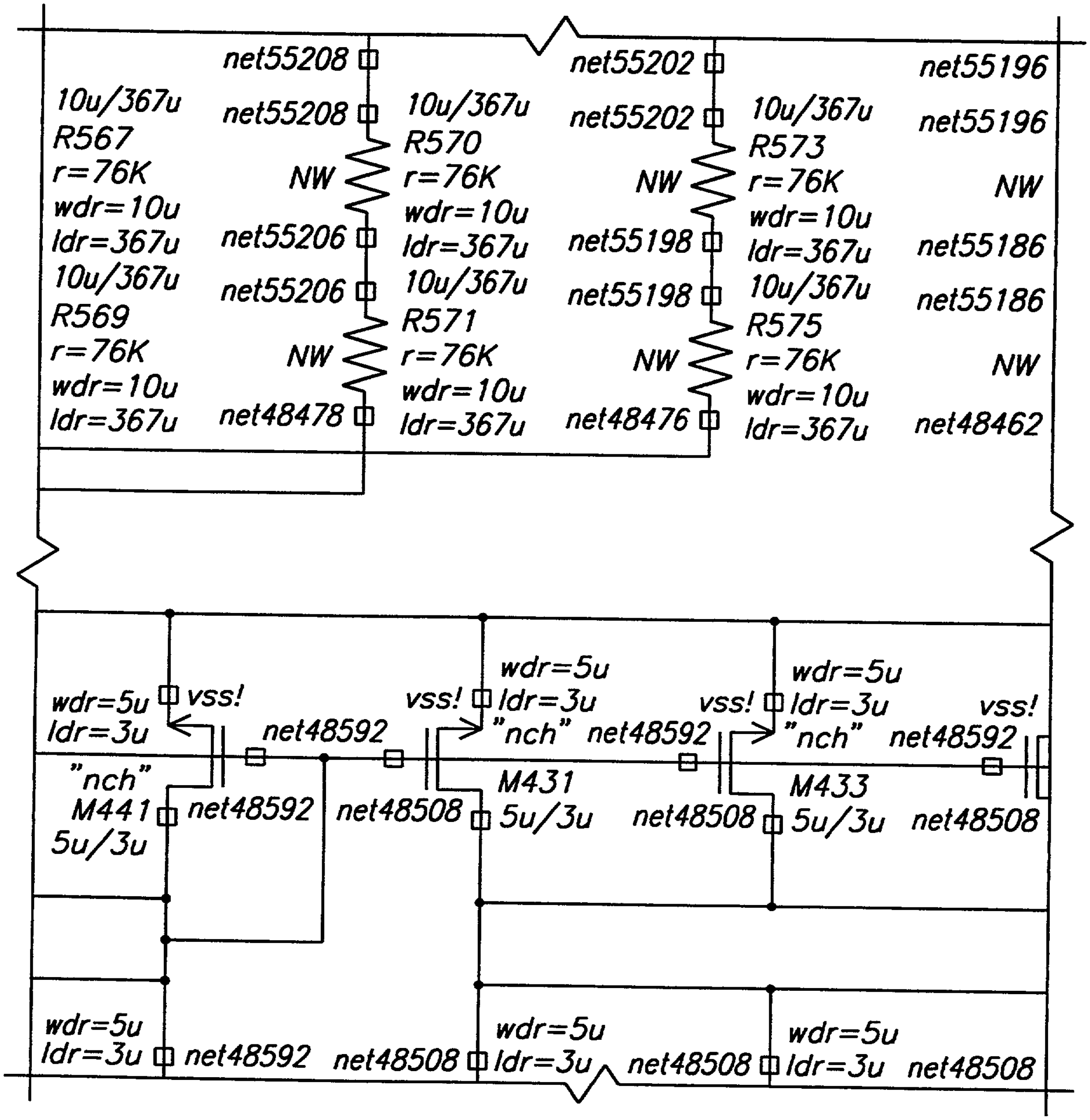

net55208
10u/367u
R567
r=76K
wdr=10u
ldr=367u
10u/367u
R569
r=76K
wdr=10u
ldr=367u
net55208
NW
net55206
net55206
NW
net48478
10u/367u
R570
r=76K
wdr=10u
ldr=367u
10u/367u
R571
r=76K
wdr=10u
ldr=367u
net55202
net55202
NW
net55198
net55198
NW
net48476
10u/367u
R573
r=76K
wdr=10u
ldr=367u
10u/367u
R575
r=76K
wdr=10u
ldr=367u
net55196
net55196
NW
net55186
net55186
NW
net48462
wdr=5u
ldr=3u
vss!
"nch"
M441
5u/3u
net48592
net48592
vss!
wdr=5u
ldr=3u
"nch"
net48592
net48508
M431
5u/3u
vss!
wdr=5u
ldr=3u
"nch"
net48592
net48508
M433
5u/3u
vss!
net48592
net48508
wdr=5u
ldr=3u
net48592
net48508
wdr=5u
ldr=3u
net48508
wdr=5u
ldr=3u
net48508

Fig 16CC

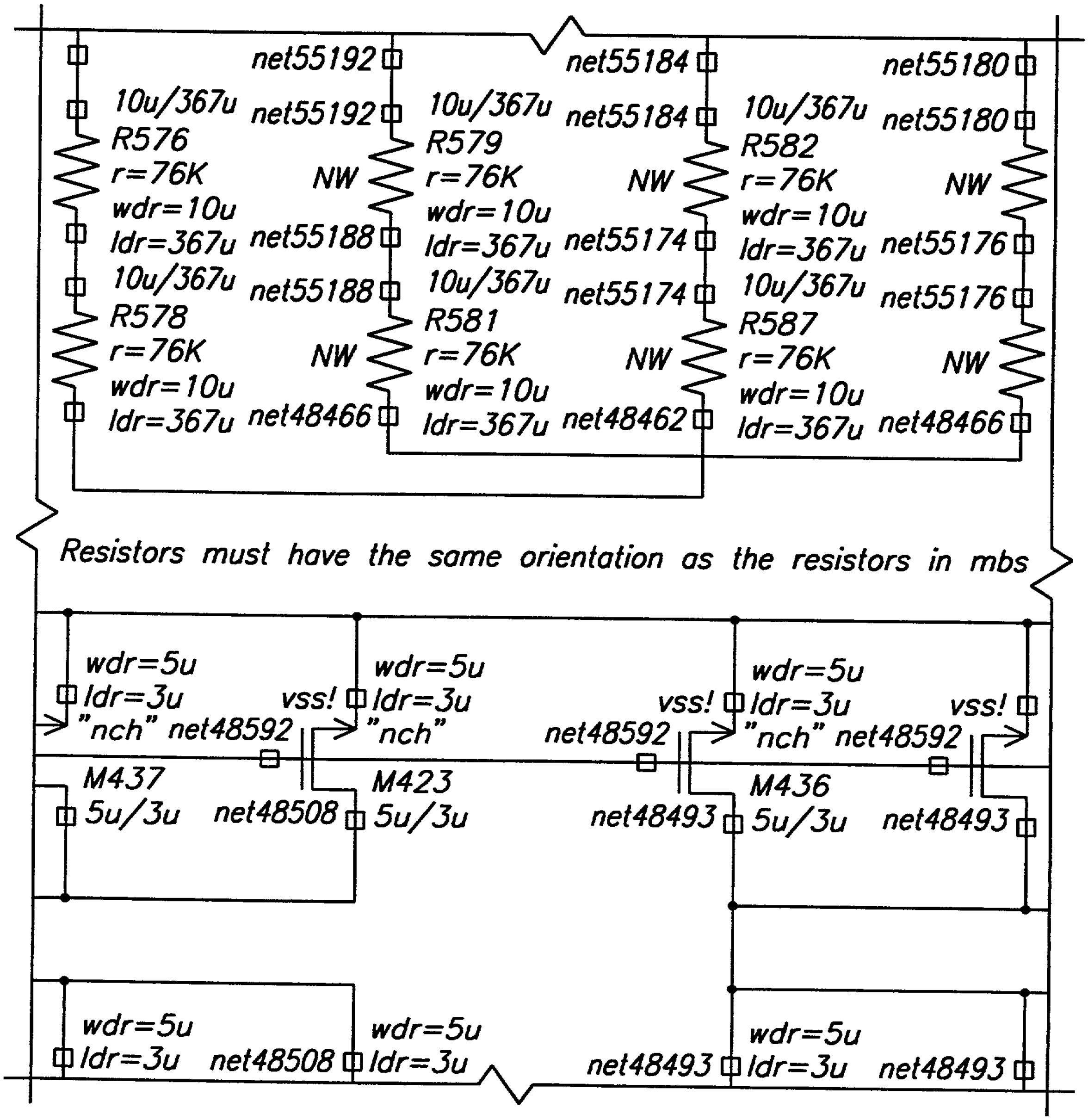

net55192
net55192
10u/367u
R576
r=76K
wdr=10u
ldr=367u
NW
net55188
10u/367u
R578
r=76K
wdr=10u
ldr=367u
net55188
NW
net48466
net55184
10u/367u
R579
r=76K
wdr=10u
ldr=367u
net55184
NW
net55174
10u/367u
R581
r=76K
wdr=10u
ldr=367u
net55174
NW
net48462
net55180
10u/367u
R582
r=76K
wdr=10u
ldr=367u
net55180
NW
net55176
10u/367u
R587
r=76K
wdr=10u
ldr=367u
net55176
NW
net48466
Resistors must have the same orientation as the resistors in mbs
wdr=5u
ldr=3u
"nch"
net48592
M437
5u/3u
vss!
net48508
wdr=5u
ldr=3u
"nch"
M423
5u/3u
net48592
vss!
net48493
wdr=5u
ldr=3u
"nch"
net48592
M436
5u/3u
vss!
net48493
wdr=5u
ldr=3u
net48508
wdr=5u
ldr=3u
net48493
wdr=5u
ldr=3u
net48493

Fig 16CD

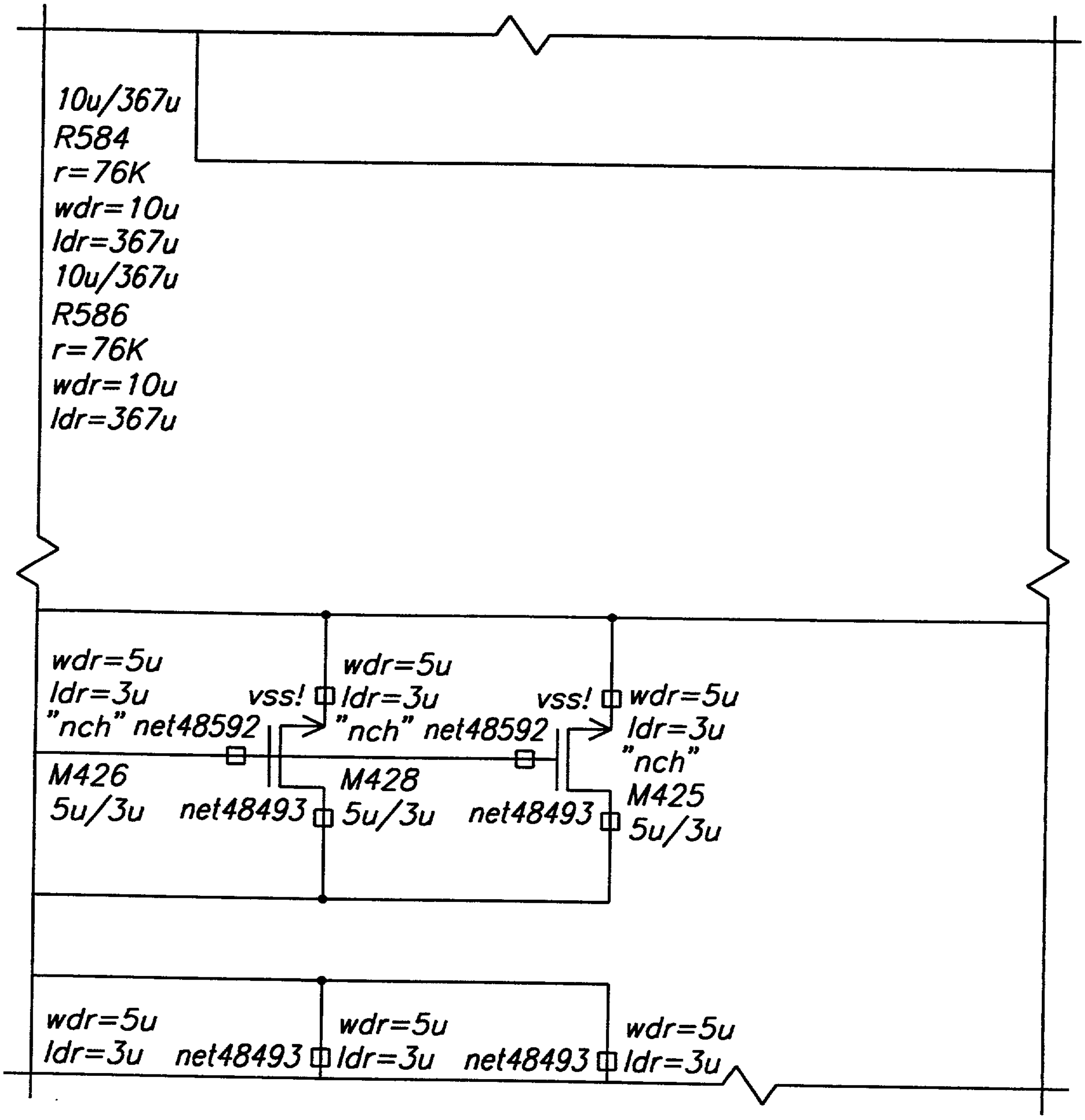

10u/367u
R584
r=76K
wdr=10u
ldr=367u
10u/367u
R586
r=76K
wdr=10u
ldr=367u
wdr=5u
ldr=3u
"nch" net48592
M426
5u/3u
vss!
net48493
wdr=5u
ldr=3u
"nch" net48592
M428
5u/3u
vss!
net48493
wdr=5u
ldr=3u
"nch"
M425
5u/3u
wdr=5u
ldr=3u
net48493
wdr=5u
ldr=3u
net48493
wdr=5u
ldr=3u

Fig 16CE

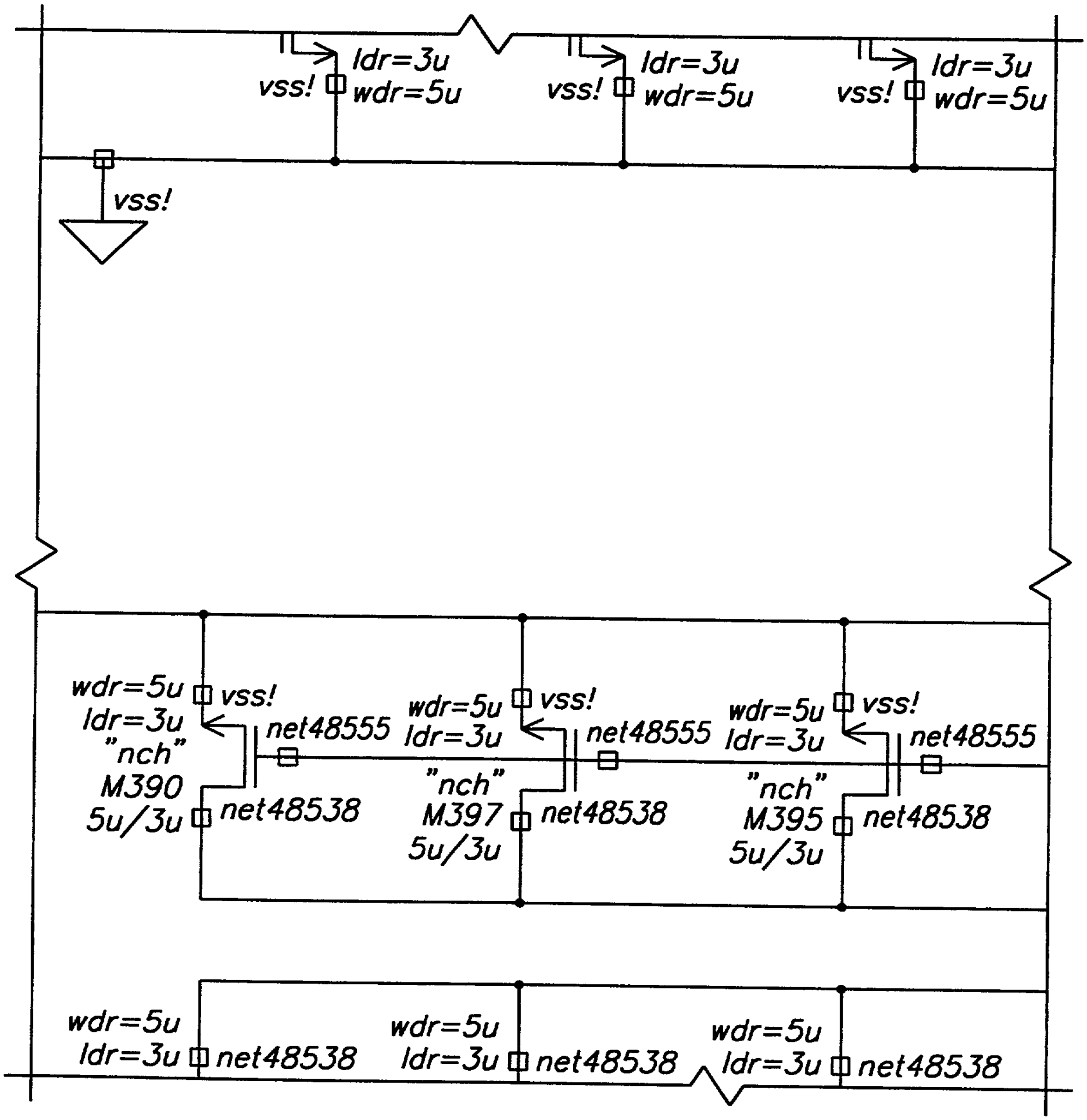

ldr=3u
wdr=5u
vss!
ldr=3u
wdr=5u
vss!
ldr=3u
wdr=5u
vss!
vss!
wdr=5u
ldr=3u
"nch"
M390
5u/3u
vss!
net48555
net48538
wdr=5u
ldr=3u
"nch"
M397
5u/3u
vss!
net48555
net48538
wdr=5u
ldr=3u
"nch"
M395
5u/3u
vss!
net48555
net48538
wdr=5u
ldr=3u
net48538
wdr=5u
ldr=3u
net48538
wdr=5u
ldr=3u
net48538

Fig 16CF

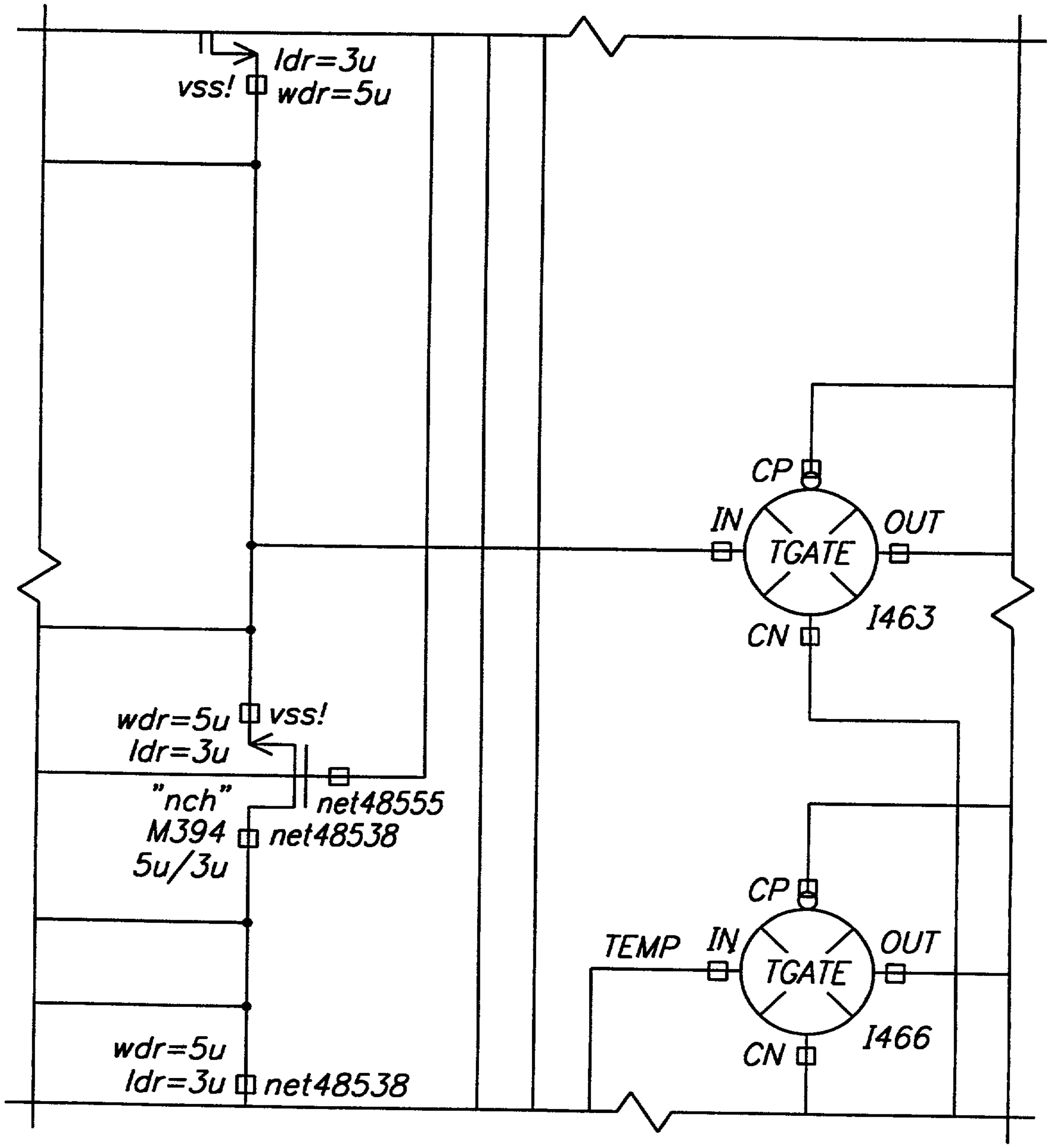

ldr=3u
vss!
wdr=5u
CP
IN
OUT
TGATE
I463
CN
wdr=5u
vss!
ldr=3u
"nch"
M394
5u/3u
net48555
net48538
CP
TEMP
IN
OUT
TGATE
I466
CN
wdr=5u
ldr=3u
net48538

Fig 16G

3031/3273

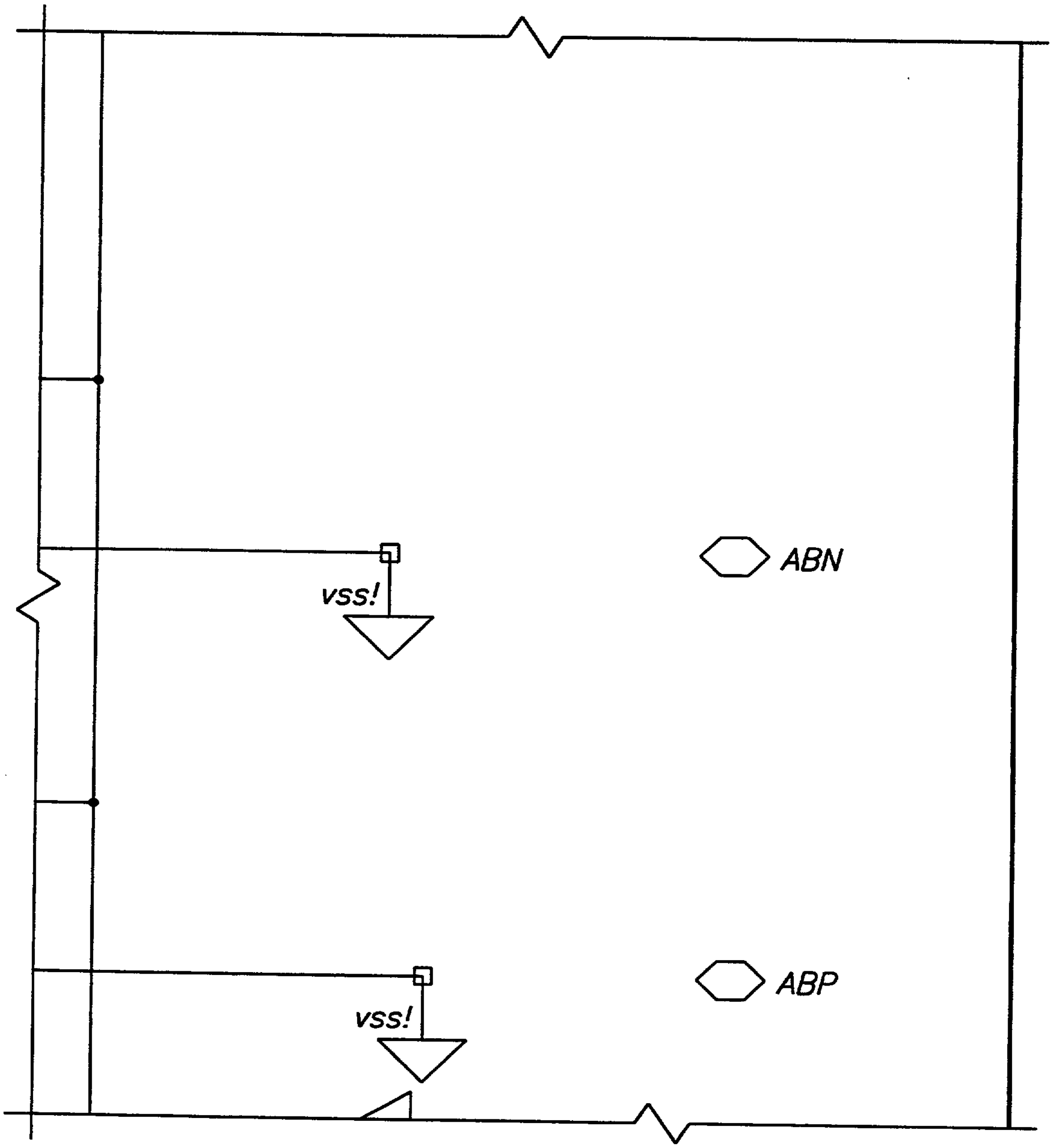


Fig 16CH

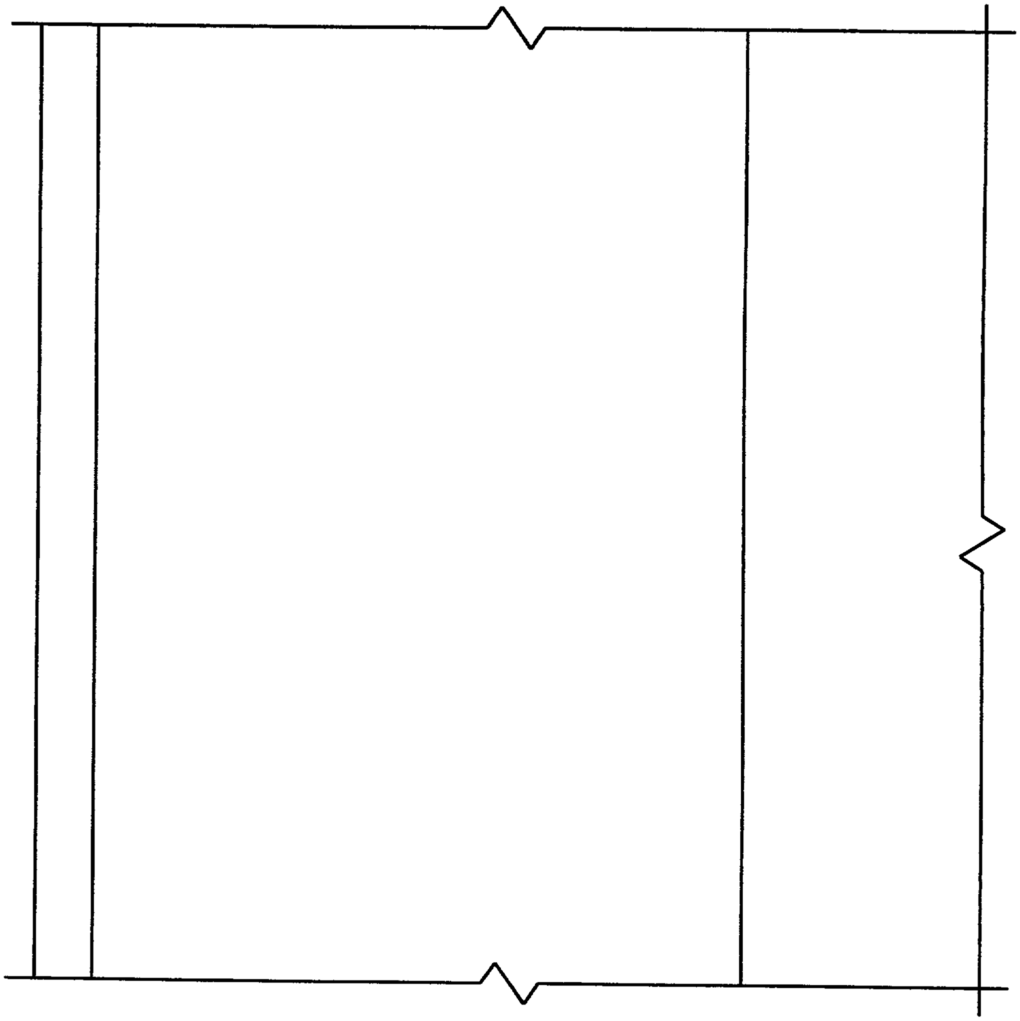


Fig 16DA

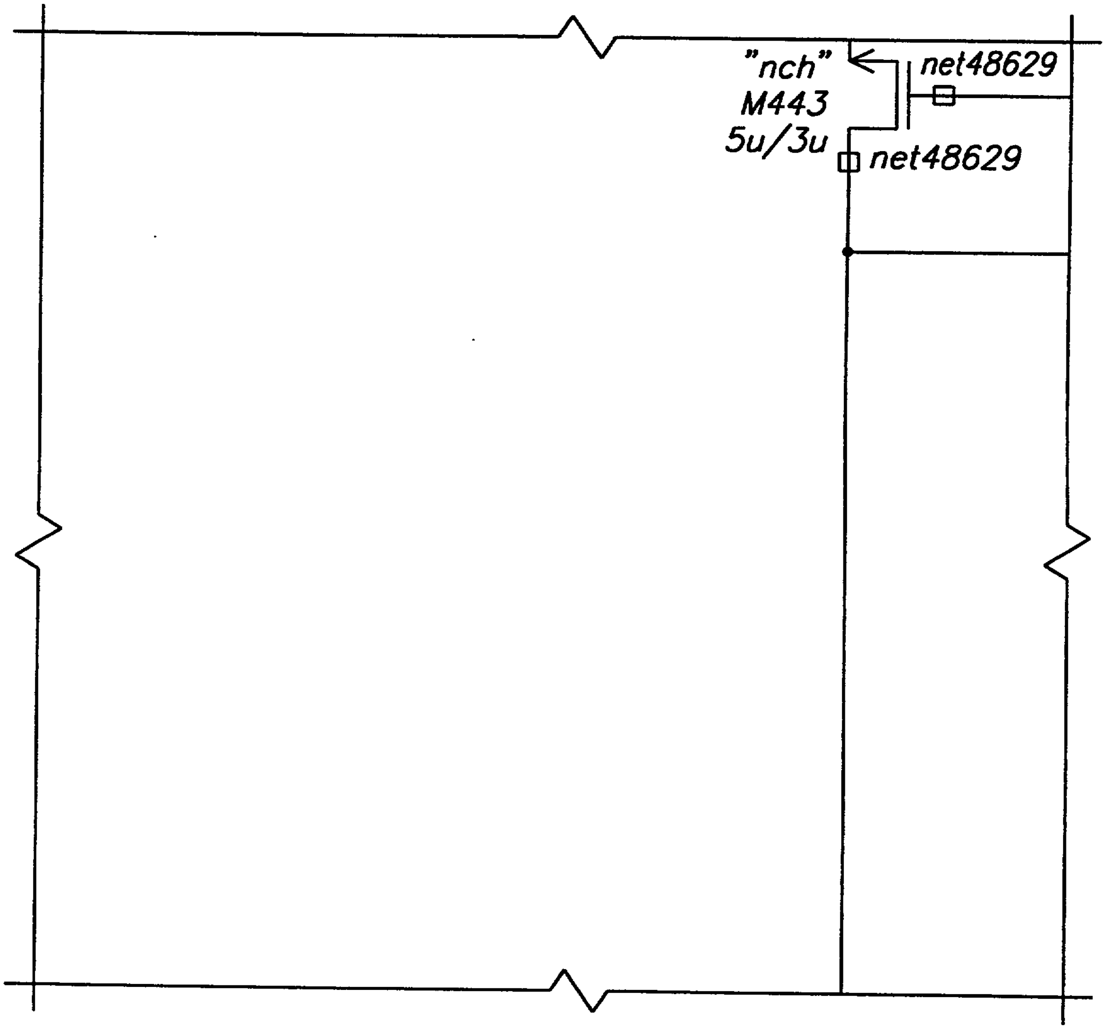


Fig 16DB

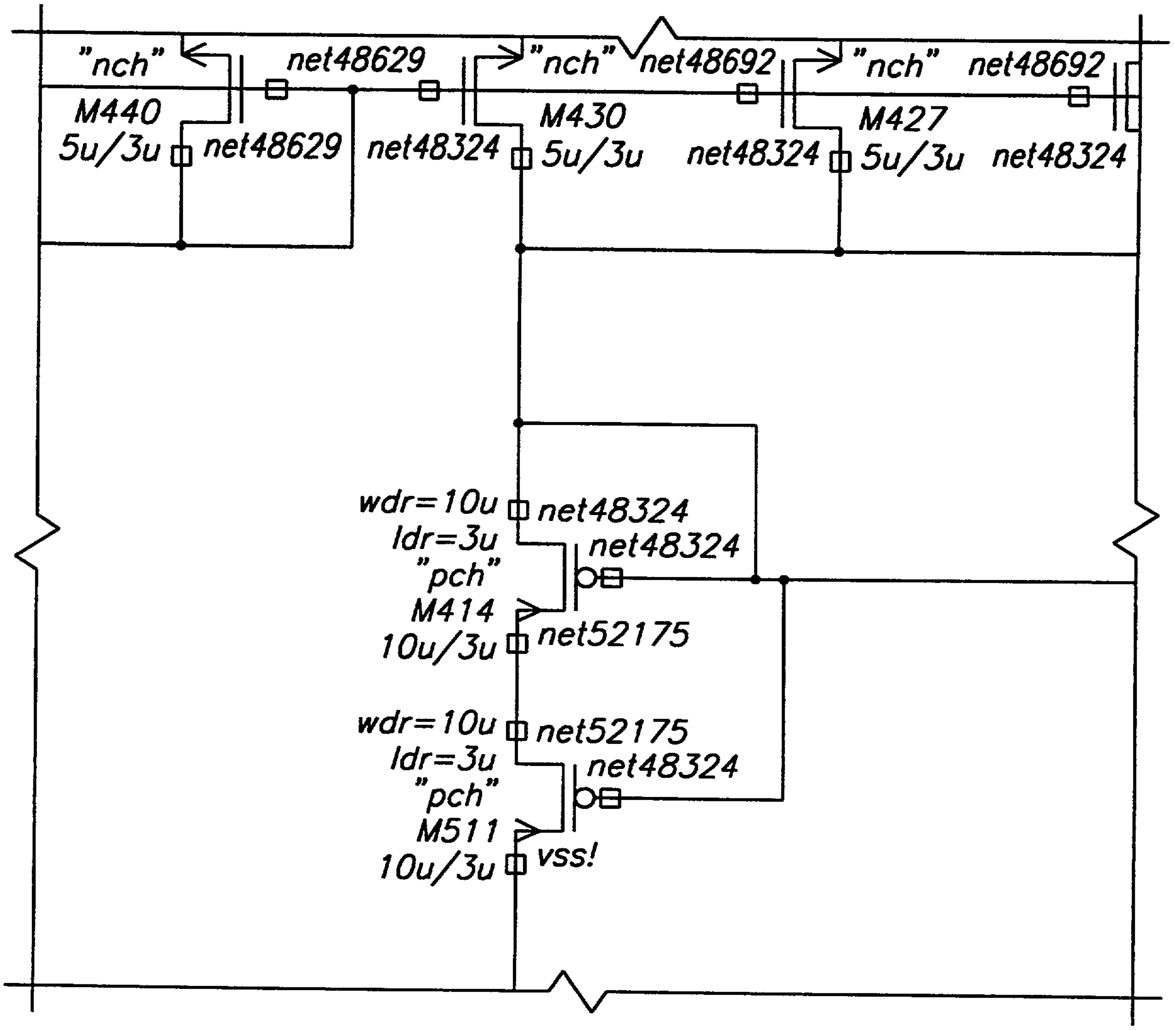

"nch"
M440
5u/3u
net48629
net48629
"nch"
M430
5u/3u
net48324
net48692
"nch"
M427
5u/3u
net48324
net48692
net48324
wdr=10u
ldr=3u
"pch"
M414
10u/3u
net48324
net48324
net52175
wdr=10u
ldr=3u
"pch"
M511
10u/3u
net52175
net48324
vss!

Fig 16DC

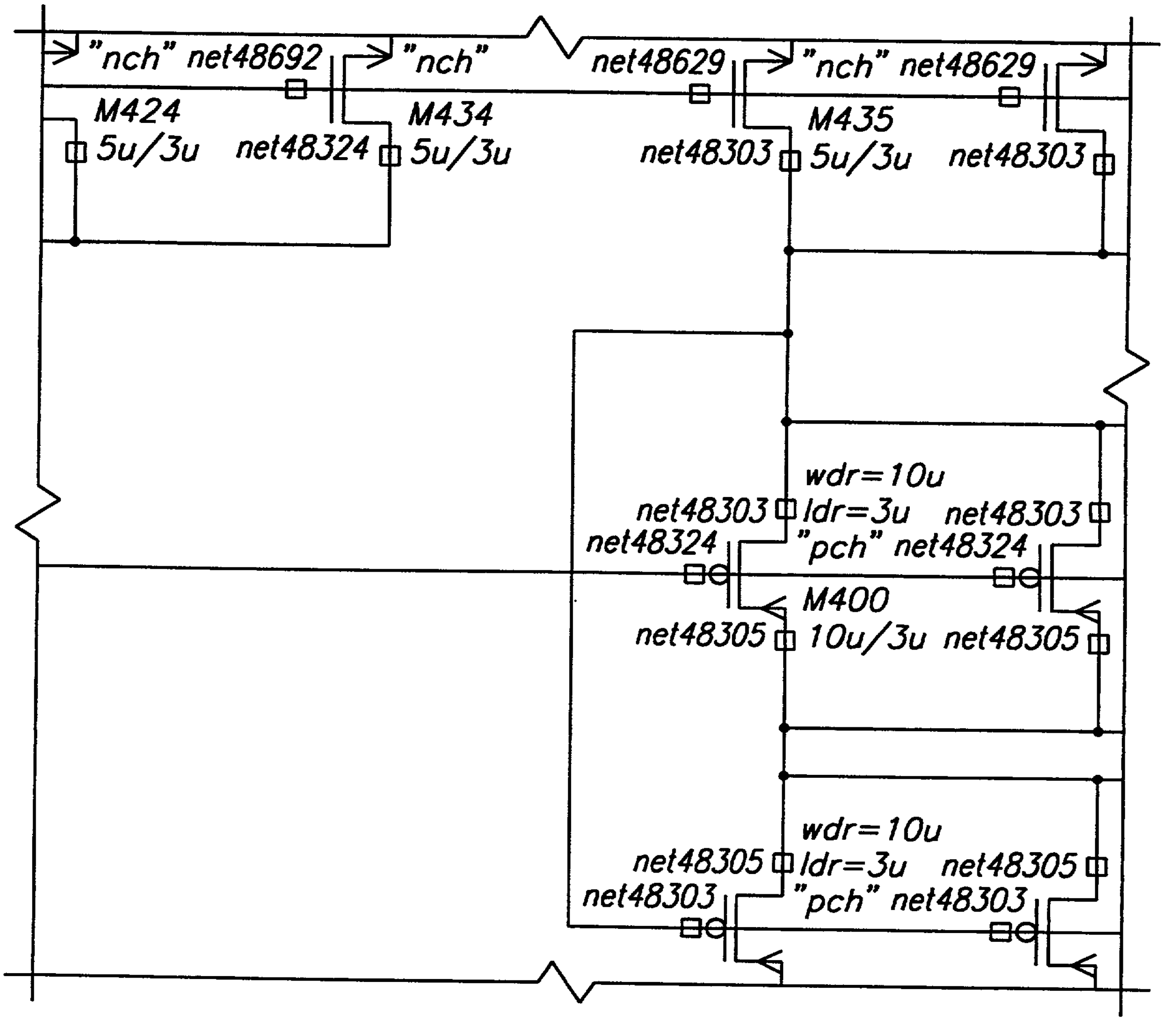

"nch" net48692
"nch"
net48629
"nch" net48629
M424
5u/3u
net48324
M434
5u/3u
net48303
M435
5u/3u
net48303
wdr=10u
net48303
ldr=3u
net48303
net48324
"pch" net48324
M400
net48305
10u/3u
net48305
wdr=10u
net48305
ldr=3u
net48305
net48303
"pch" net48303

Fig 16DD

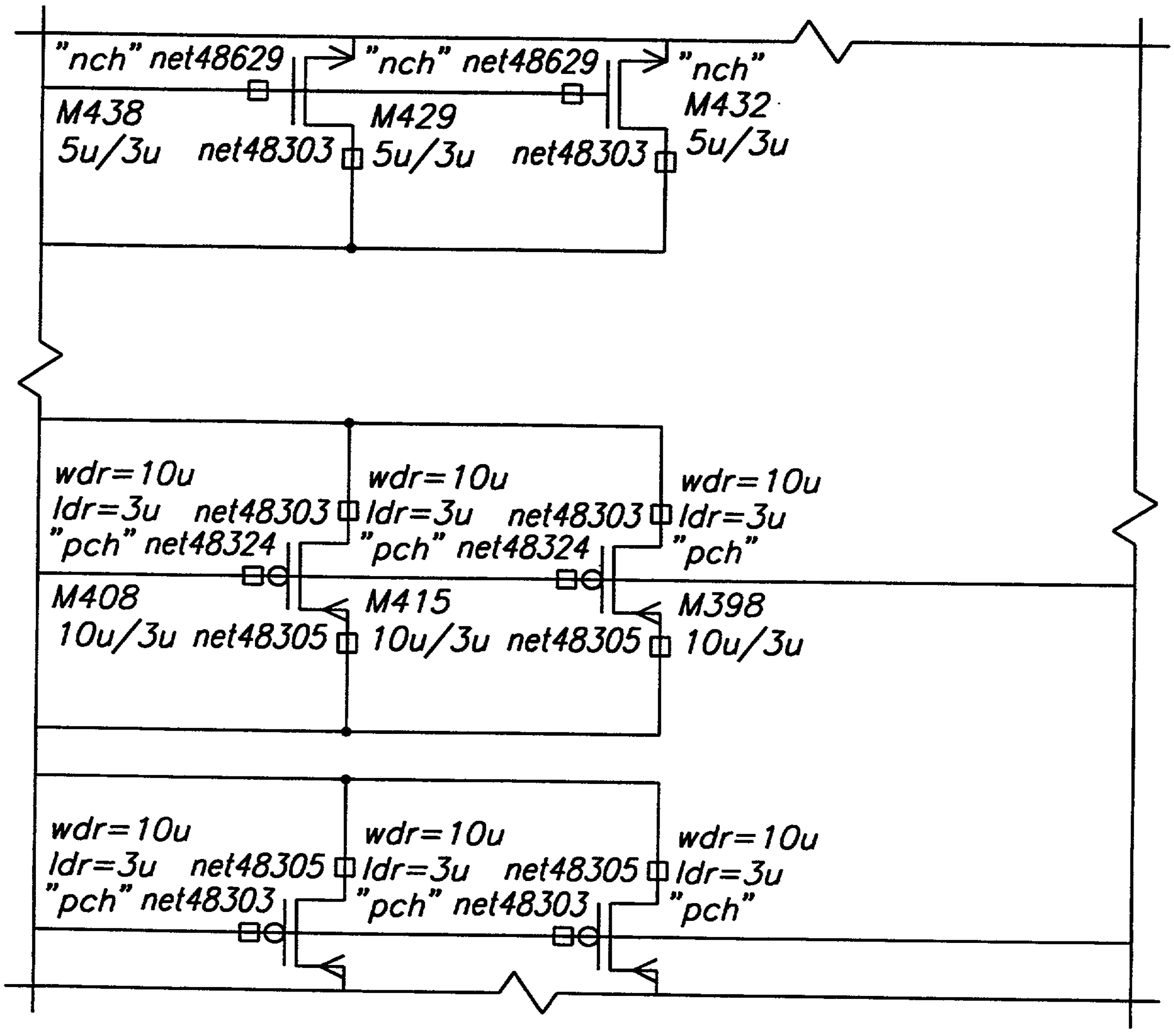

"nch" net48629
M438
5u/3u
net48303
"nch" net48629
M429
5u/3u
net48303
"nch"
M432
5u/3u
wdr=10u
ldr=3u
net48303
"pch" net48324
M408
10u/3u
net48305
wdr=10u
ldr=3u
net48303
"pch" net48324
M415
10u/3u
net48305
wdr=10u
ldr=3u
"pch"
M398
10u/3u
wdr=10u
ldr=3u
net48305
"pch" net48303
wdr=10u
ldr=3u
net48305
"pch" net48303
wdr=10u
ldr=3u
"pch"

Fig 16DE

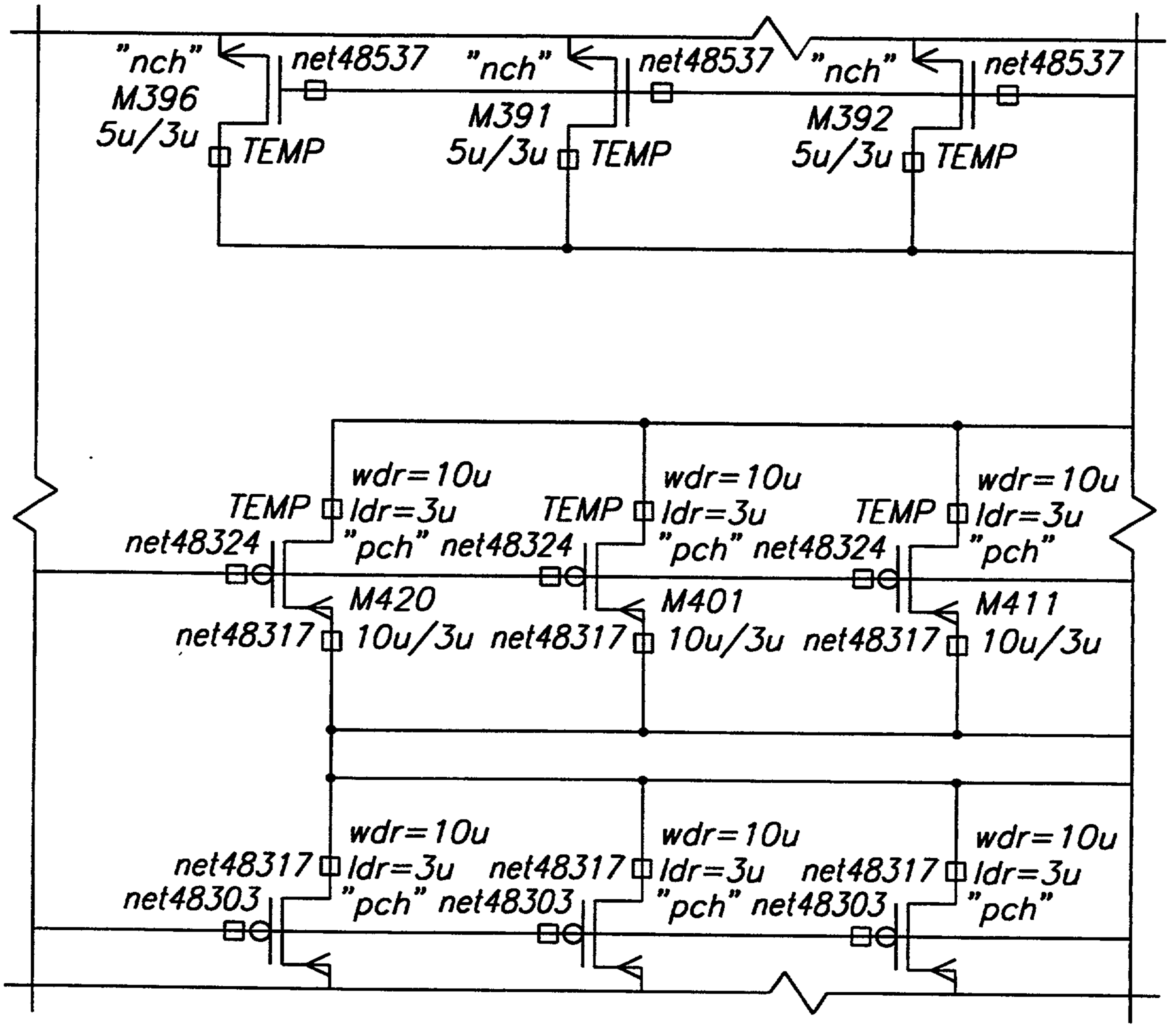

"nch"
M396
5u/3u
net48537
TEMP
"nch"
M391
5u/3u
net48537
TEMP
"nch"
M392
5u/3u
net48537
TEMP
wdr=10u
ldr=3u
"pch"
TEMP
net48324
M420
net48317
10u/3u
wdr=10u
ldr=3u
"pch"
TEMP
net48324
M401
net48317
10u/3u
wdr=10u
ldr=3u
"pch"
TEMP
net48324
M411
net48317
10u/3u
wdr=10u
ldr=3u
"pch"
net48317
net48303
wdr=10u
ldr=3u
"pch"
net48317
net48303
wdr=10u
ldr=3u
"pch"
net48317
net48303

Fig 16DF

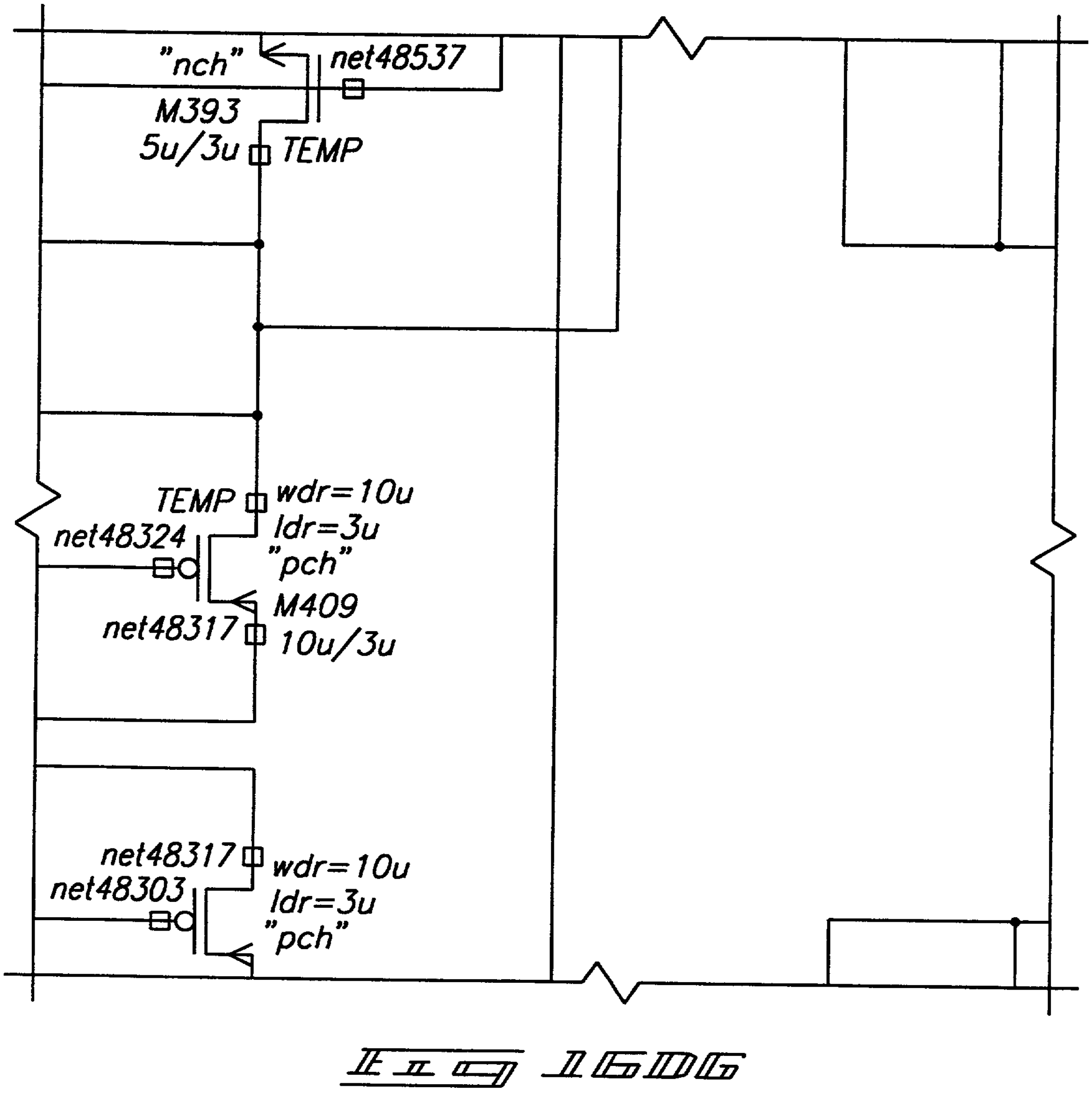

"nch"
net48537
M393
5u/3u
TEMP
TEMP
wdr=10u
ldr=3u
"pch"
net48324
M409
net48317
10u/3u
net48317
wdr=10u
ldr=3u
"pch"
net48303

Fig 16DG

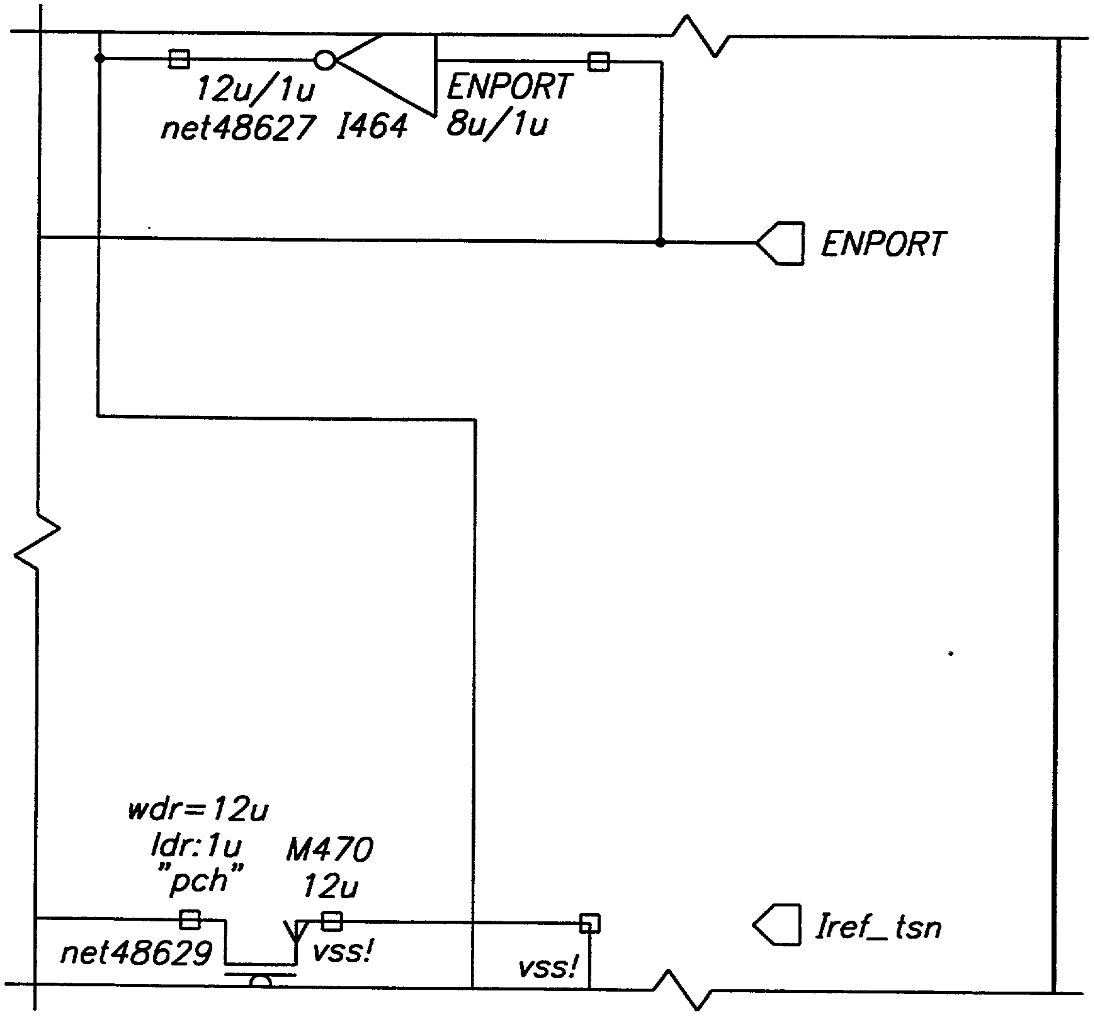

12u/1u
net48627
I464
ENPORT
8u/1u
ENPORT
wdr=12u
ldr:1u
"pch"
M470
12u
net48629
vss!
vss!
Iref_tsn

Fig 16DH

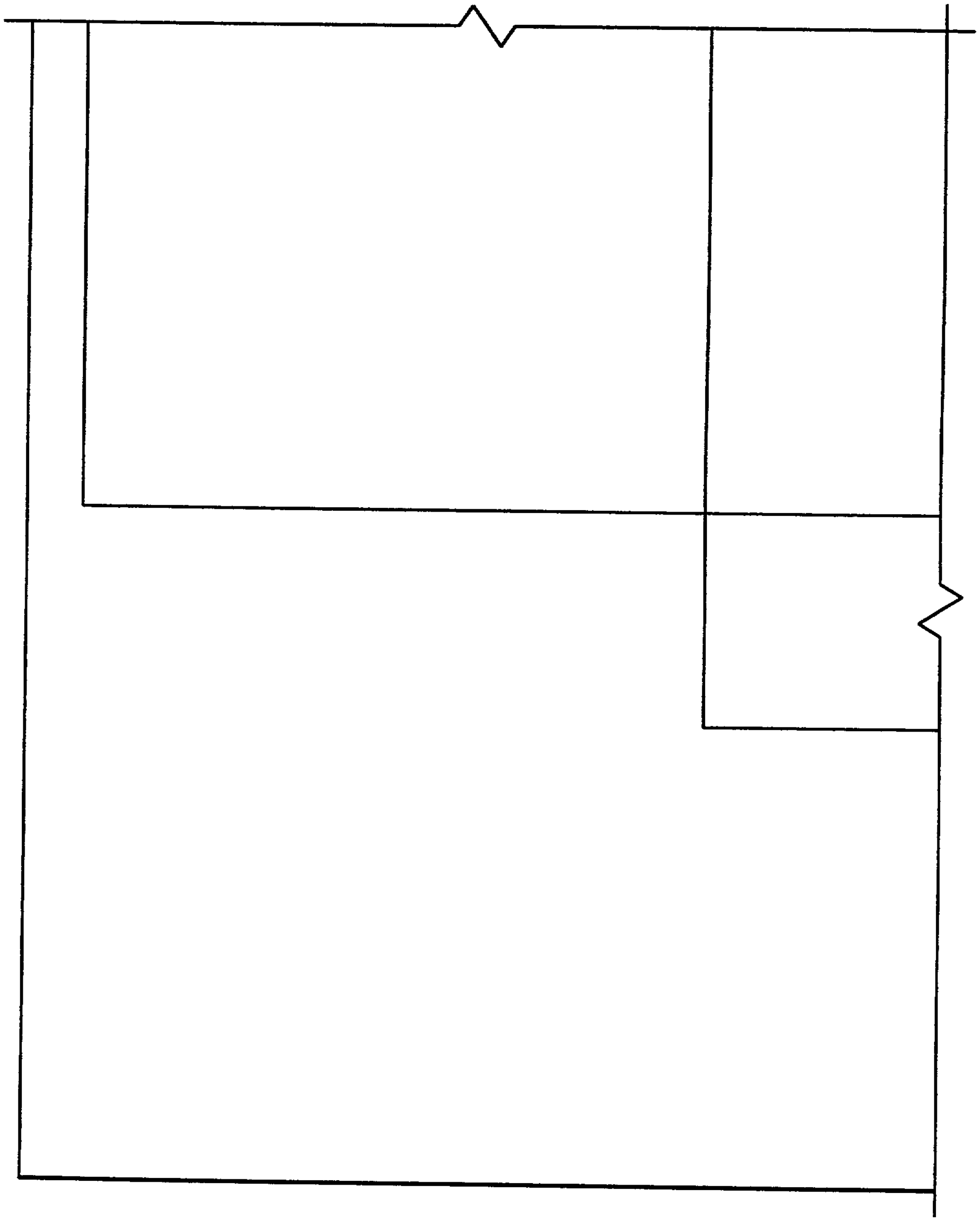


Fig 16EA

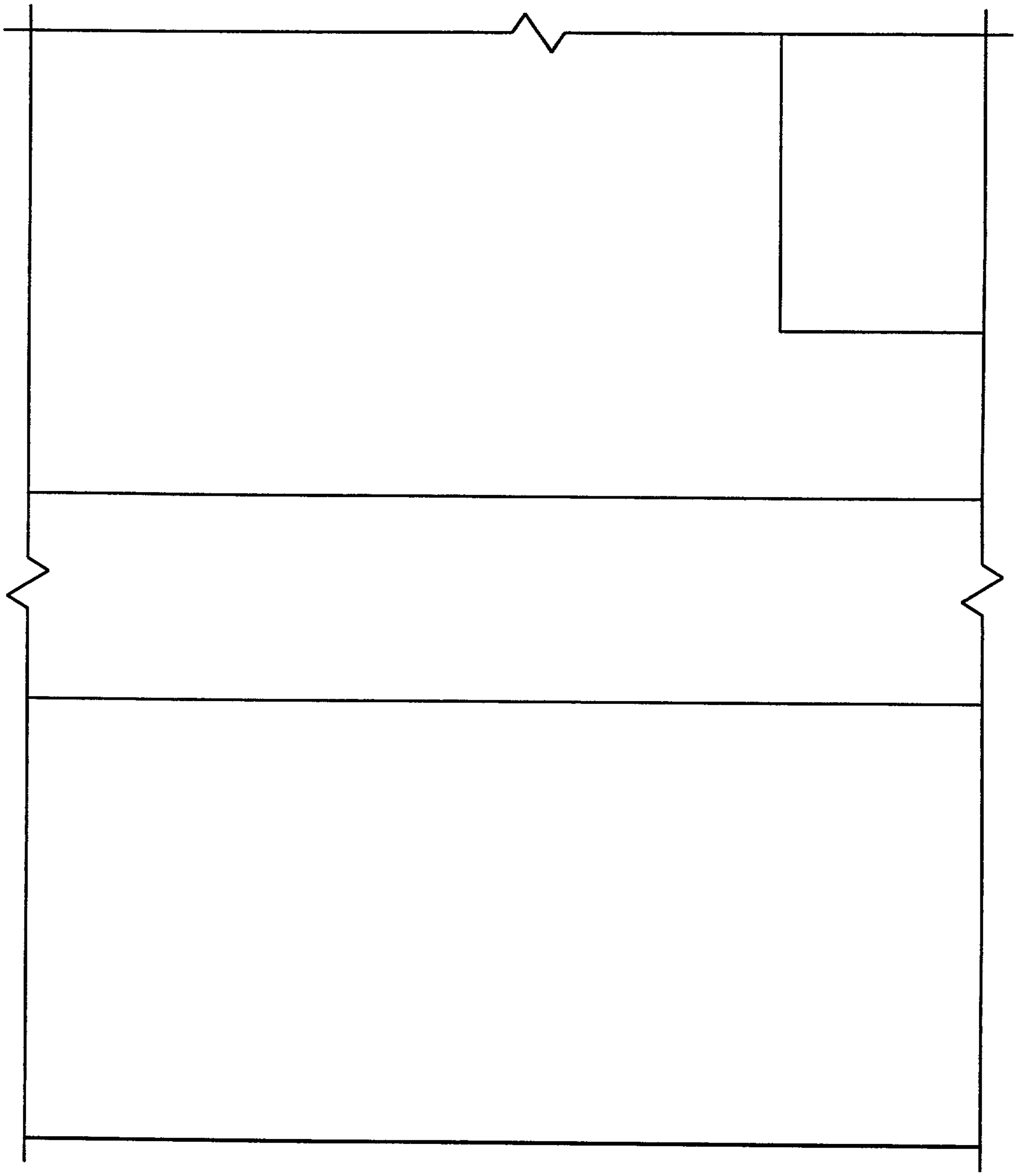


Fig 16B

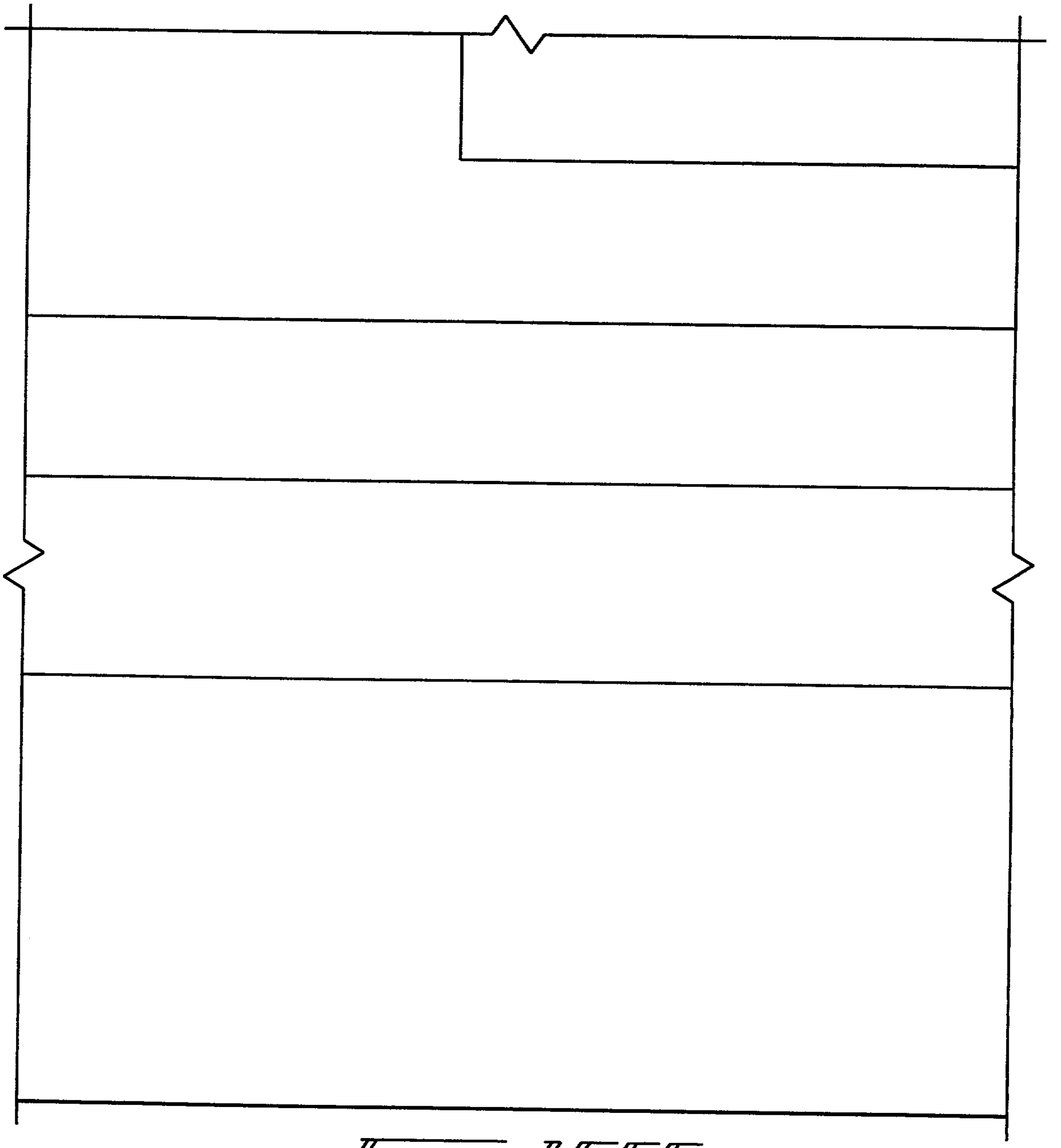


Fig 16EC

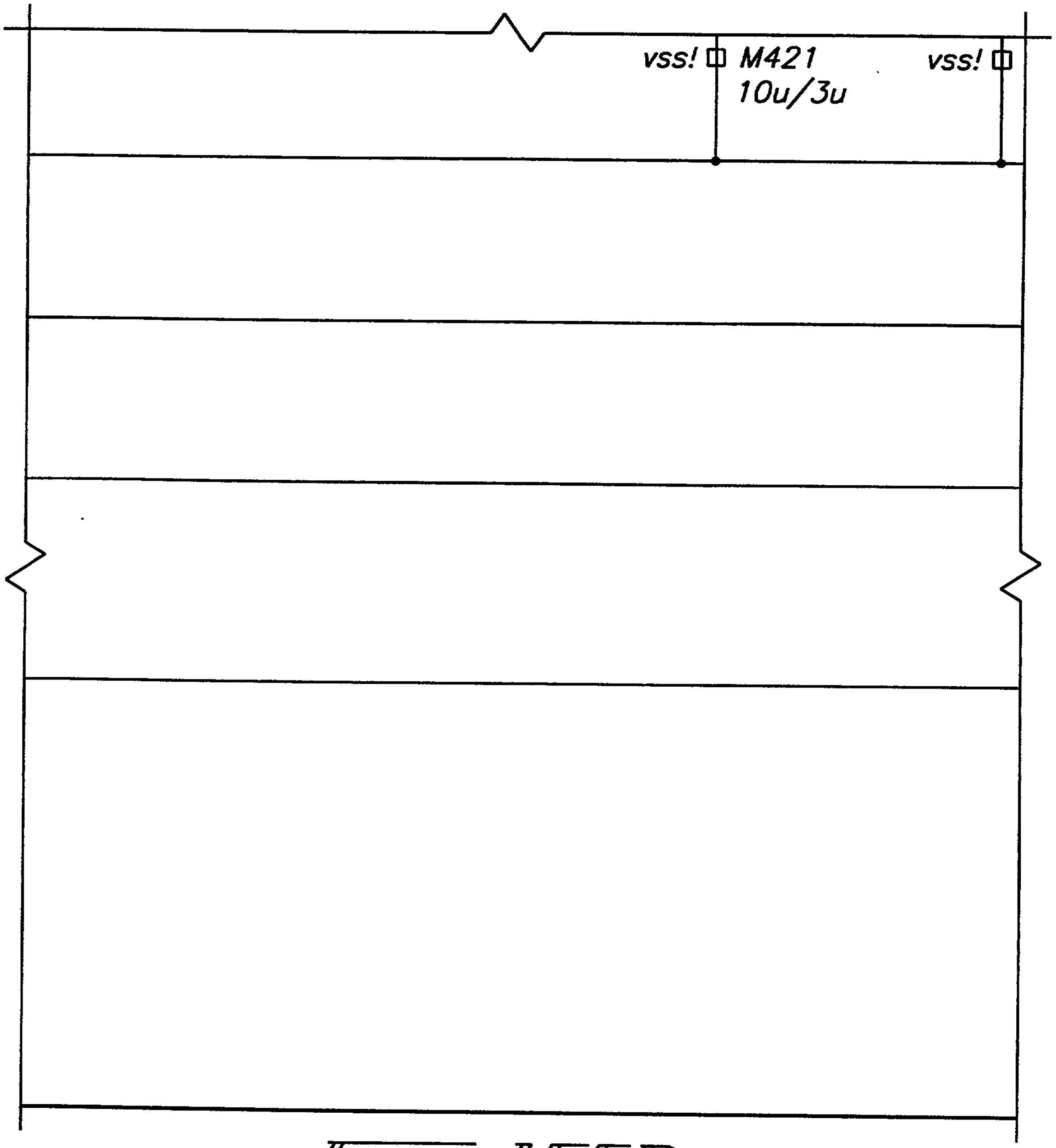


Fig 16ED

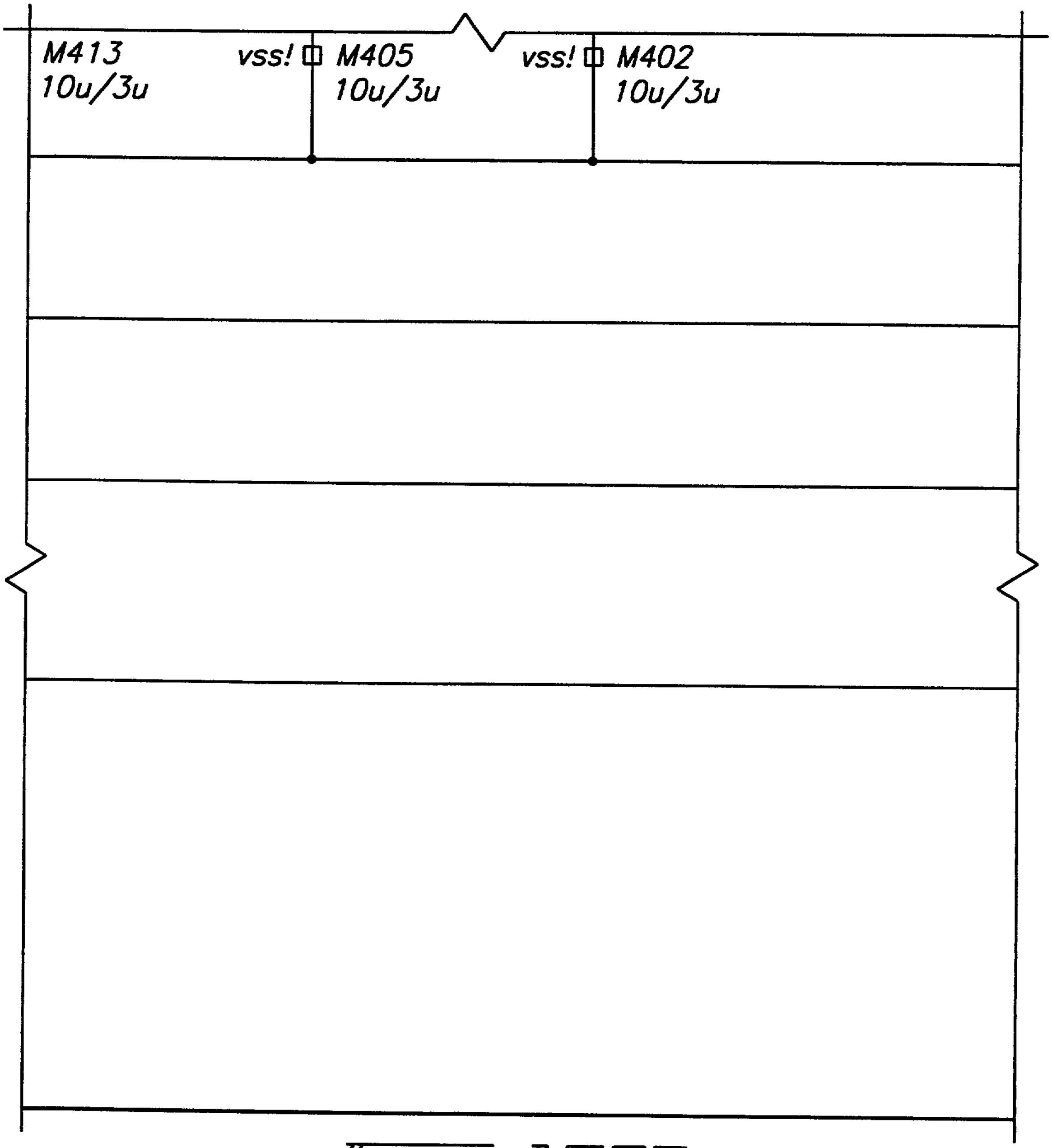


Fig 16EE

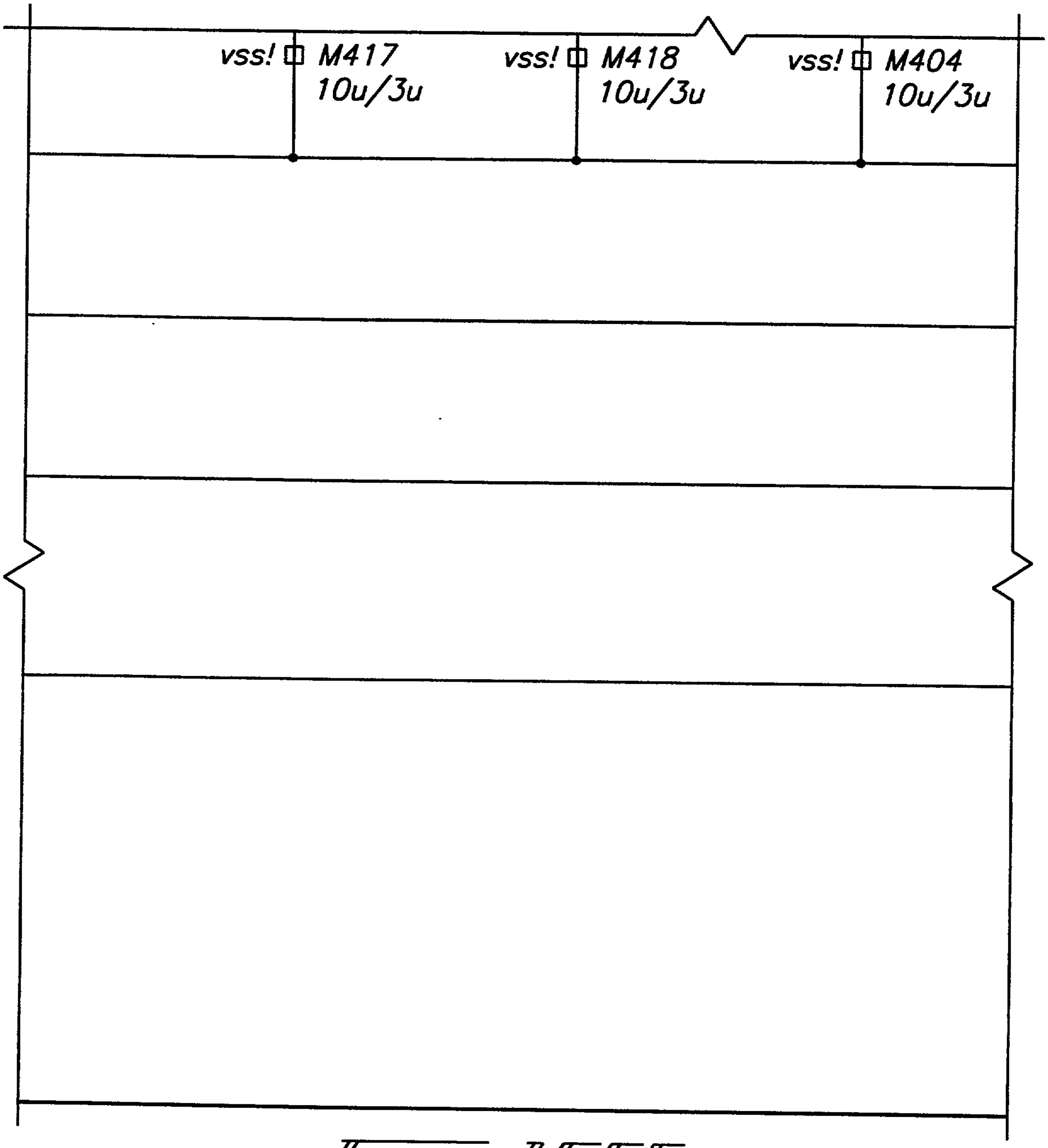


Fig 16EF

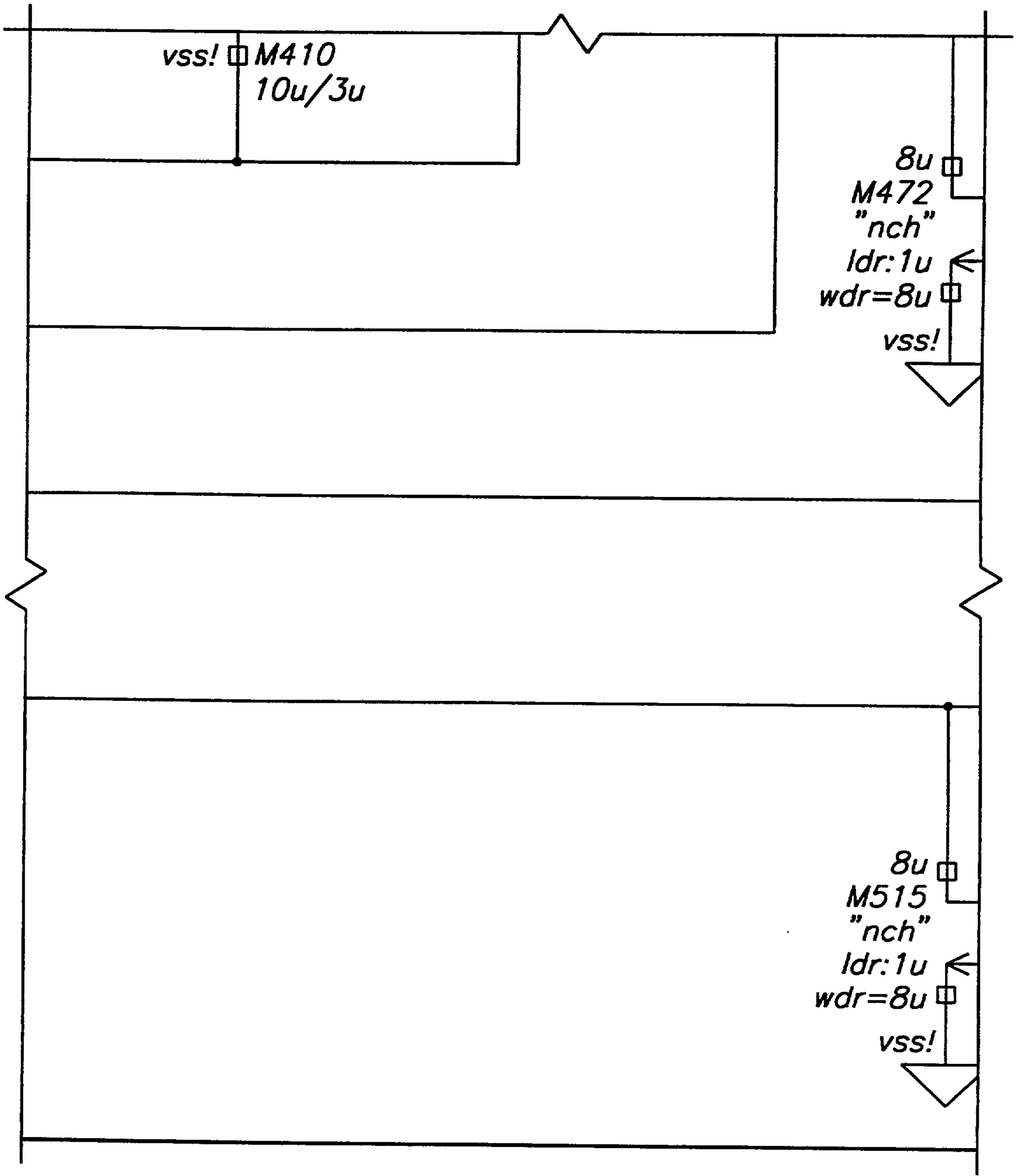

vss!
M410
10u/3u
8u
M472
"nch"
ldr:1u
wdr=8u
vss!
8u
M515
"nch"
ldr:1u
wdr=8u
vss!

Fig 16EG

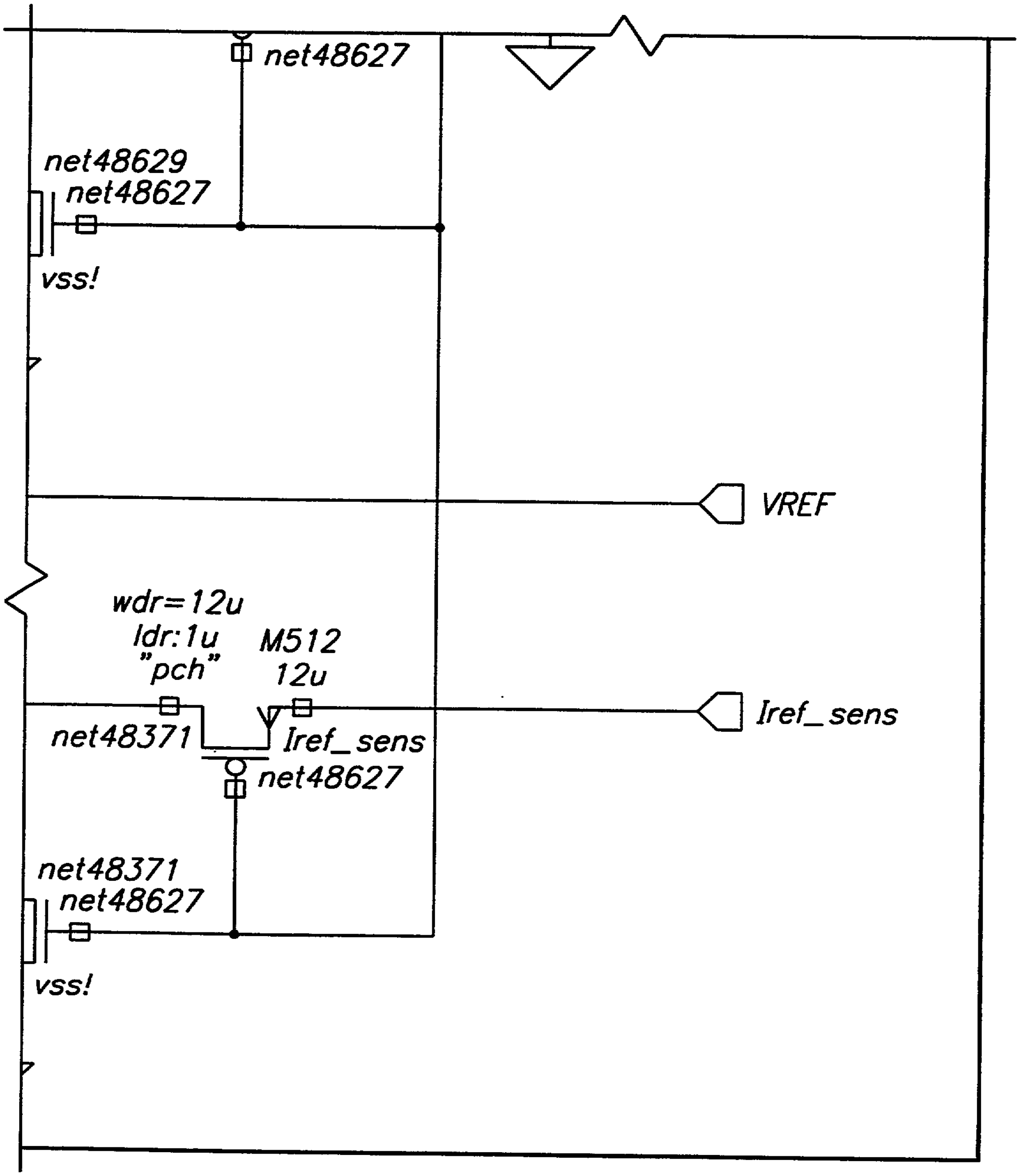

net48627
net48629
net48627
vss!
VREF
wdr=12u
ldr:1u
"pch"
M512
12u
net48371
Iref_sens
net48627
Iref_sens
net48371
net48627
vss!

Fig 16EH

16.01AA	16.01AB	16.01AC	16.01AD	16.01AE	16.01AF	16.01AG		
16.01BA	16.01BB	16.01BC	16.01BD	16.01BE	16.01BF	16.01BG	16.01BH	16.01BI
16.01CA	16.01CB	16.01CC	16.01CD	16.01CE	16.01CF	16.01CG	16.01CH	16.01CI
16.01DA	16.01DB	16.01DC	16.01DD	16.01DE	16.01DF	16.01DG	16.01DH	16.01DI

FIG. 16.01

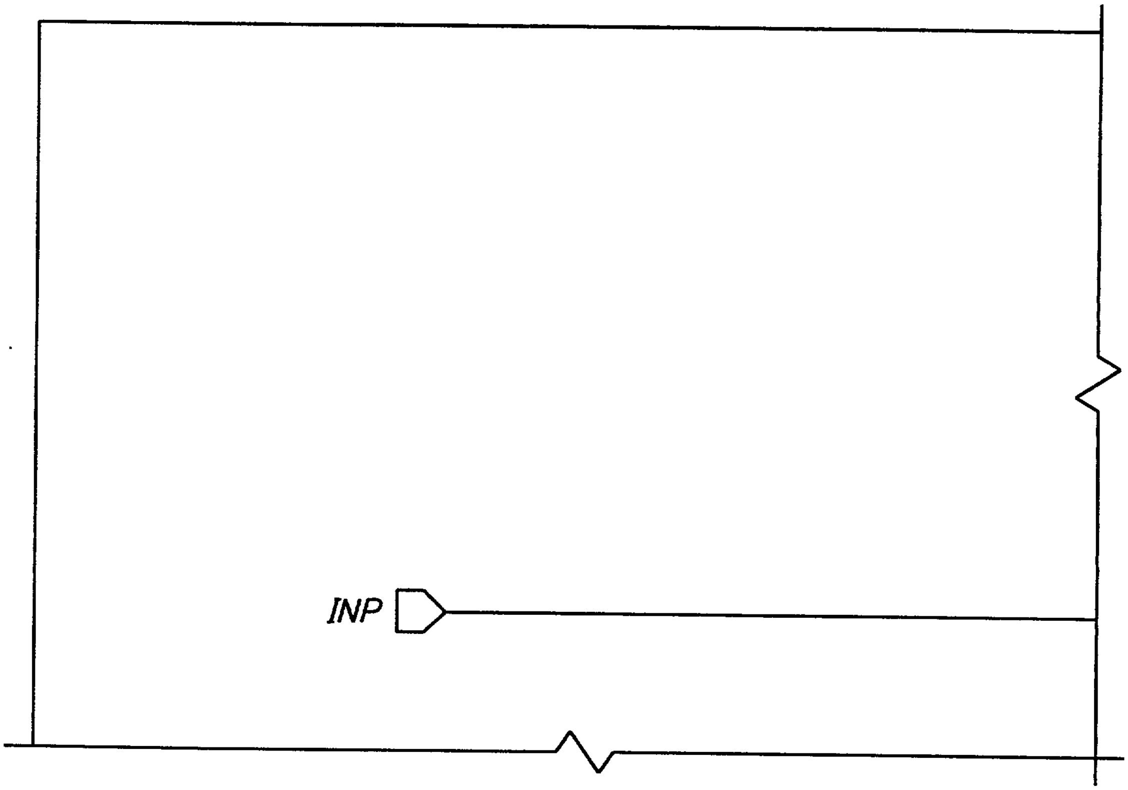


Fig 16.01AA

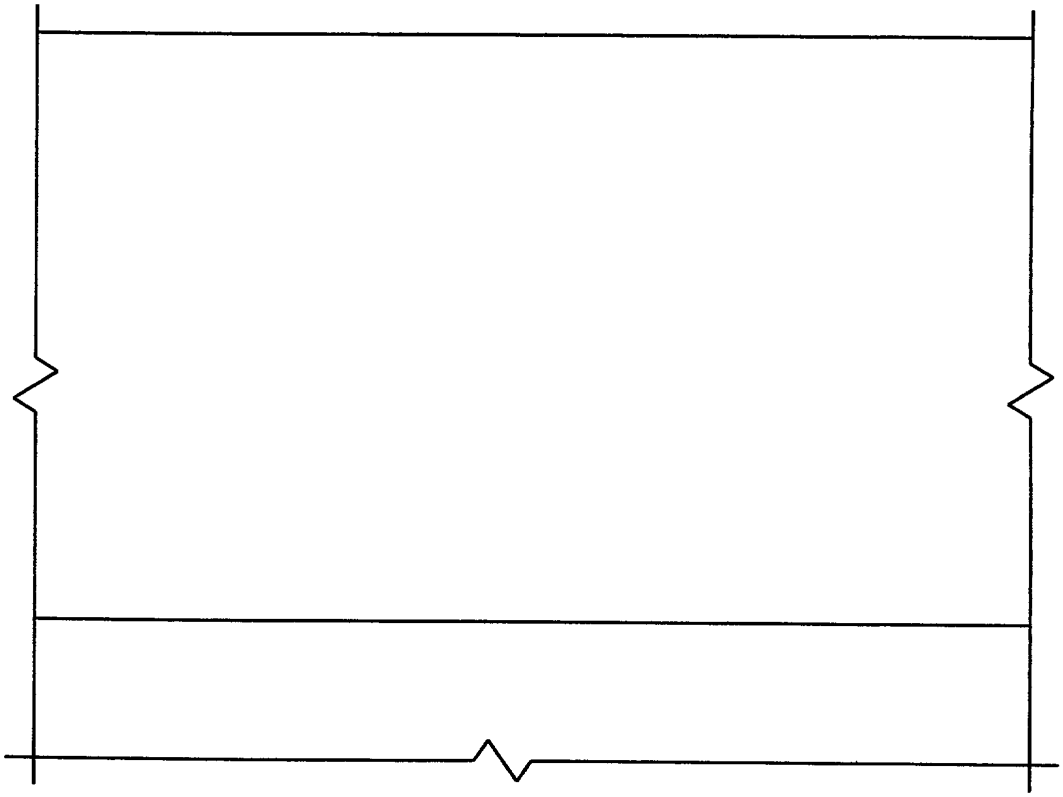


Fig 16.01AB

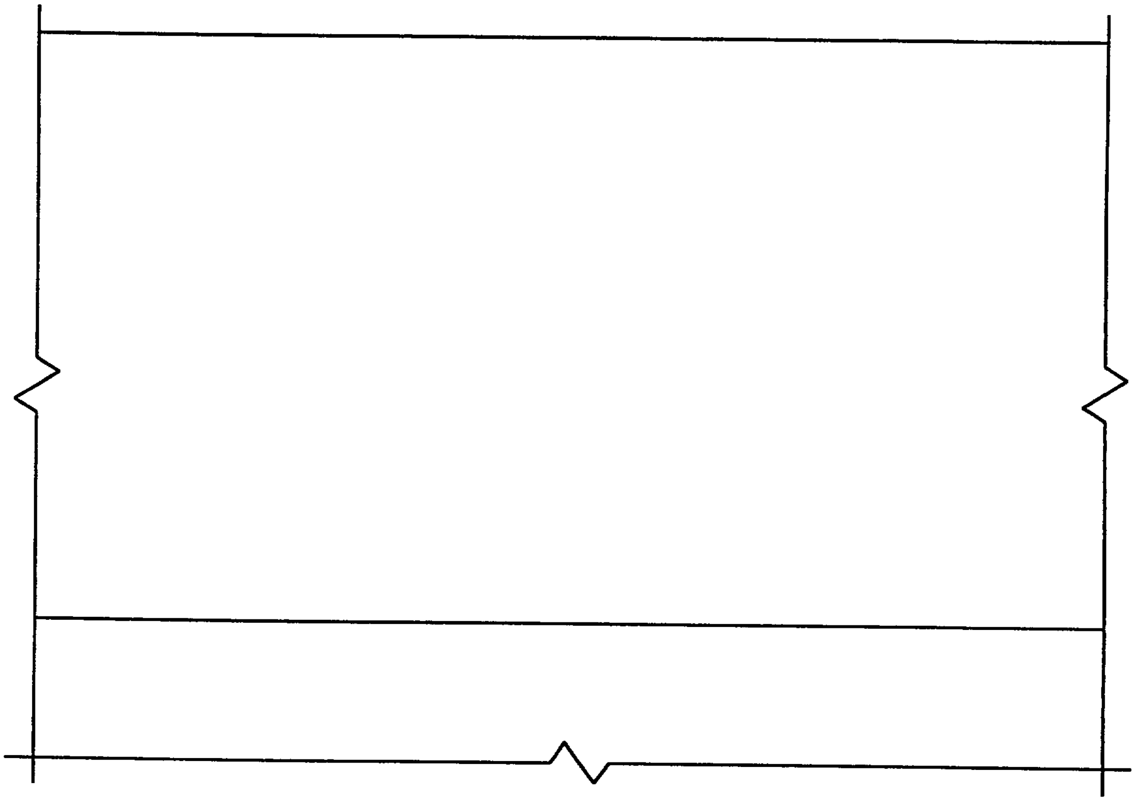


Fig 16.01AC

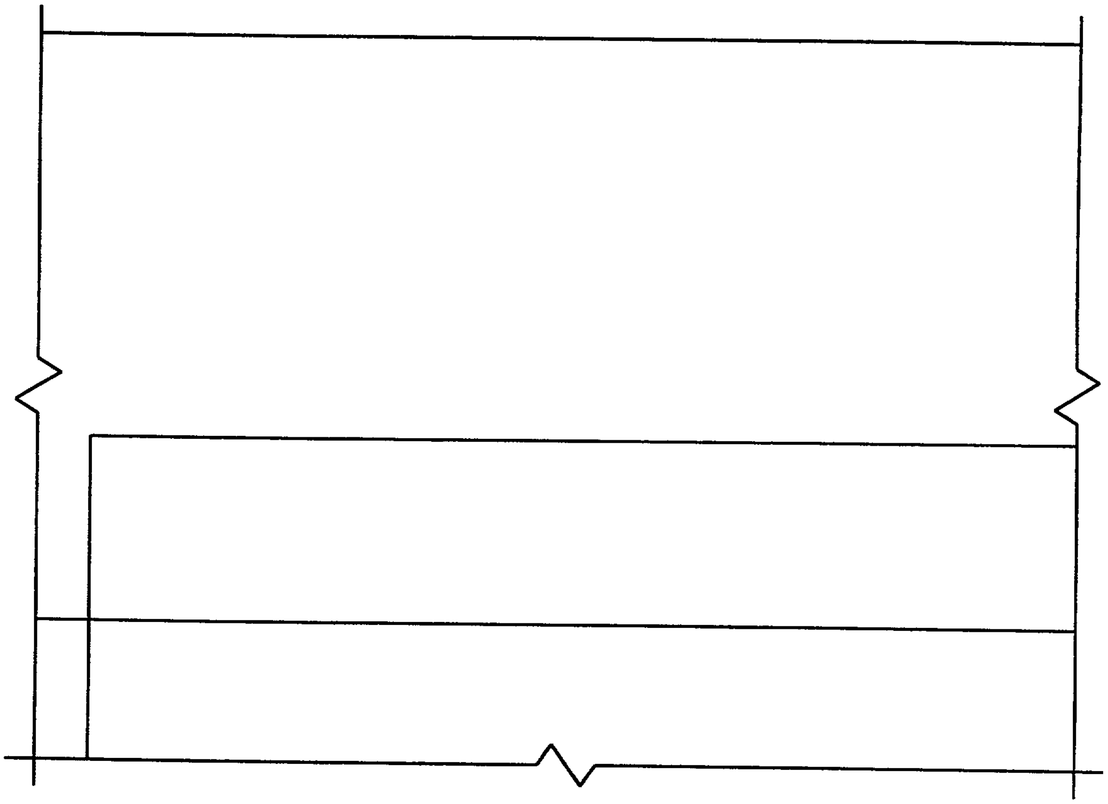


Fig 16.01AD

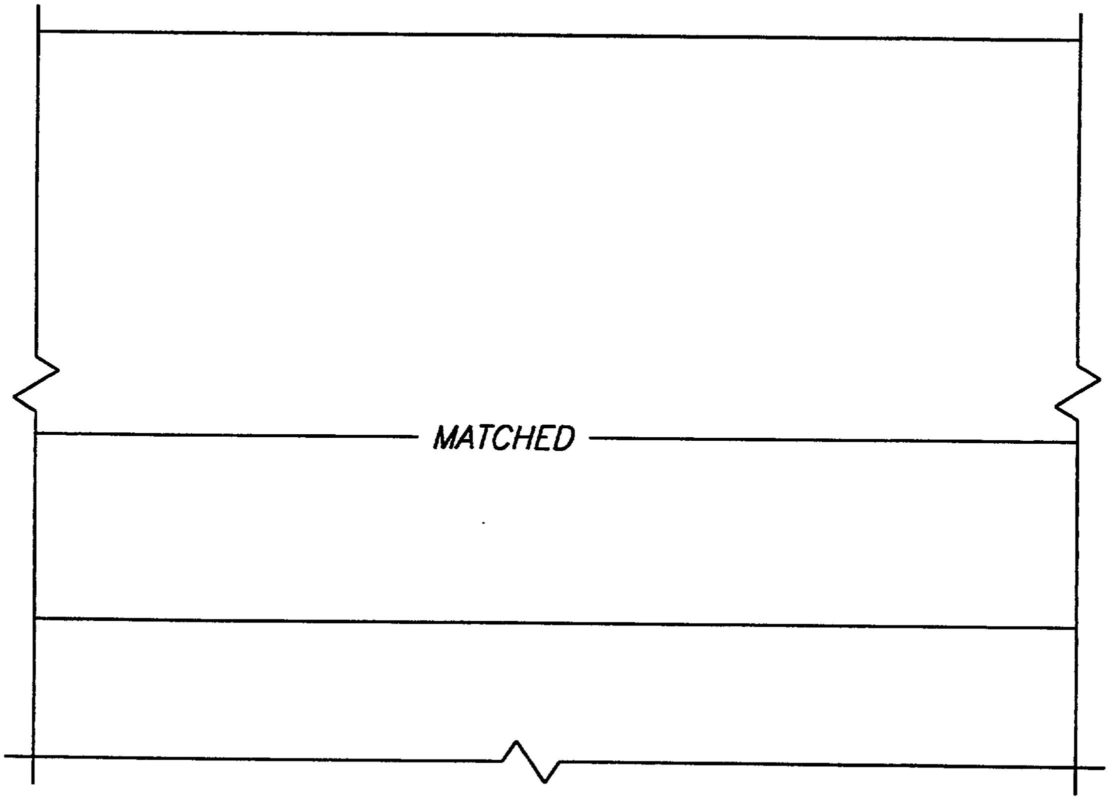


Fig 16.01AE

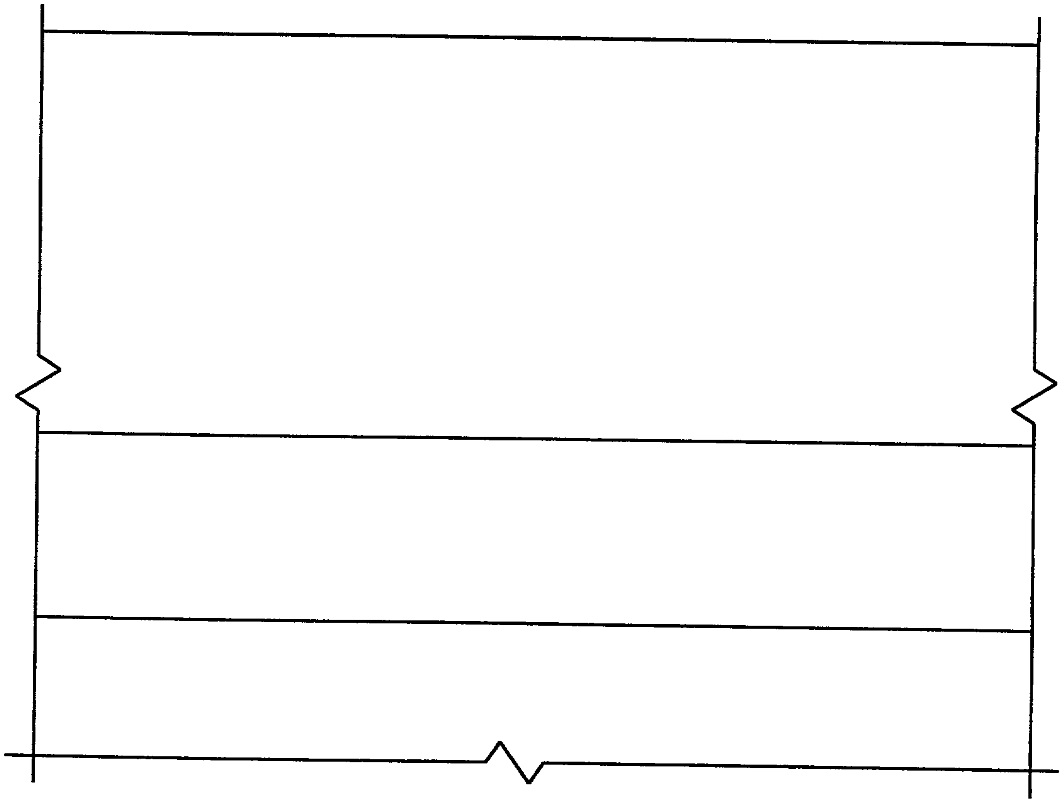


Fig 16.01AF

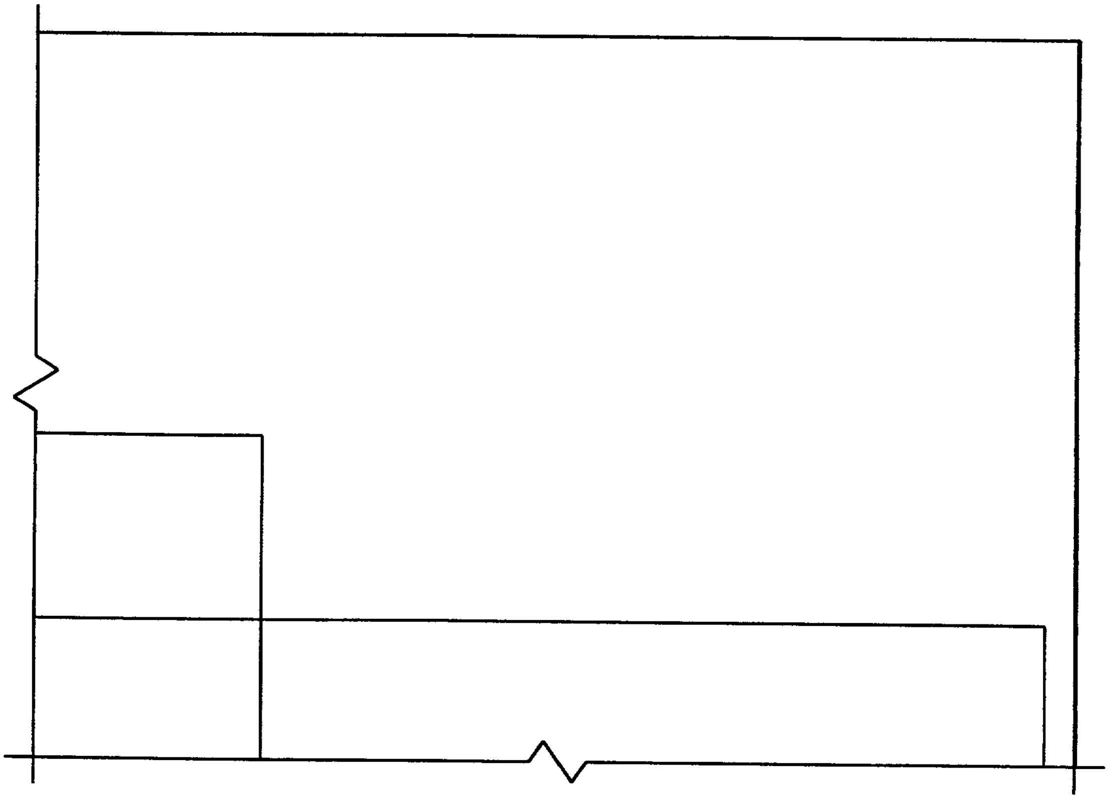


Fig 16.01AG

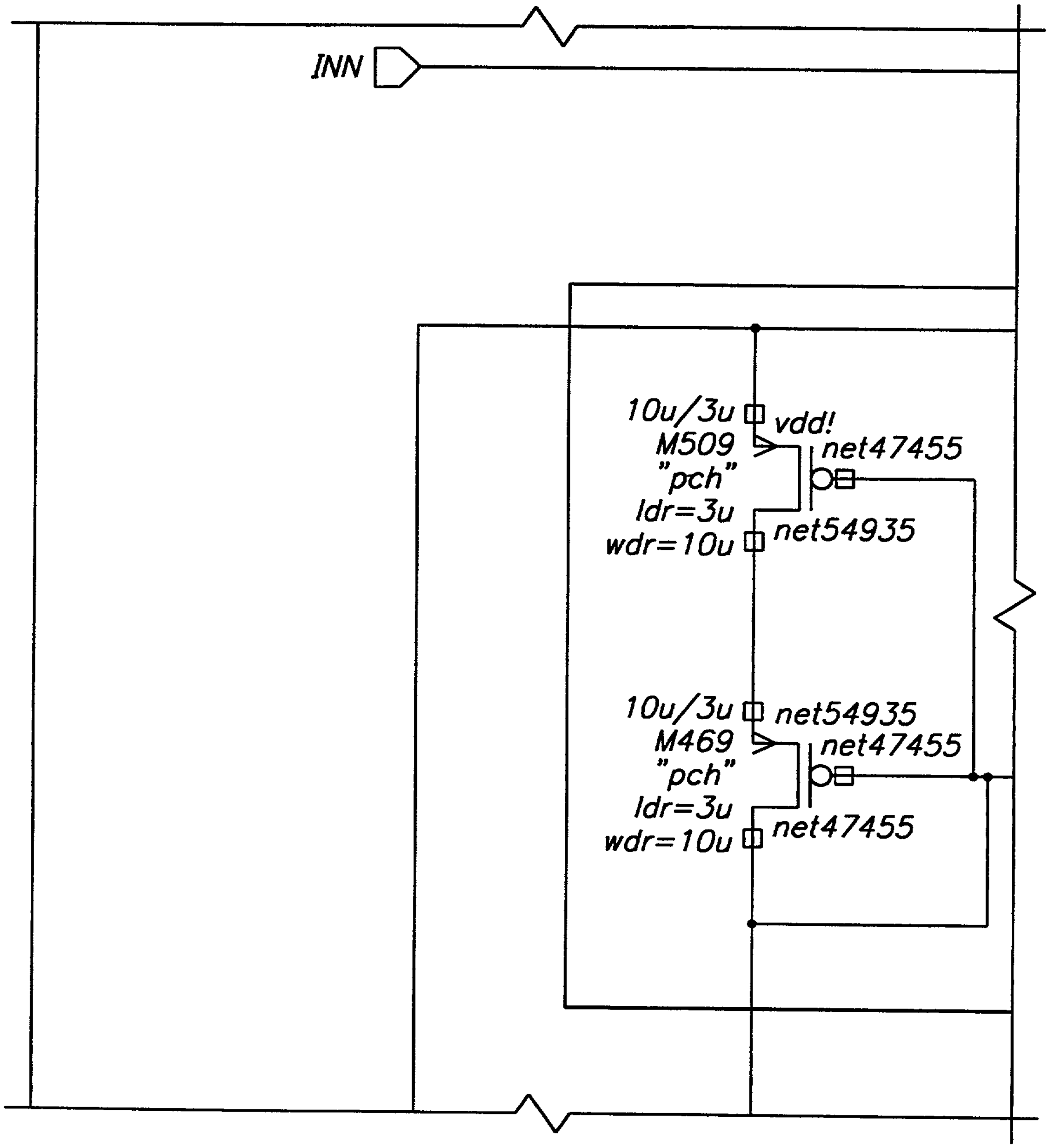

INN
10u/3u
M509
"pch"
ldr=3u
wdr=10u
vdd!
net47455
net54935
10u/3u
M469
"pch"
ldr=3u
wdr=10u
net54935
net47455
net47455

Fig 16.01BA

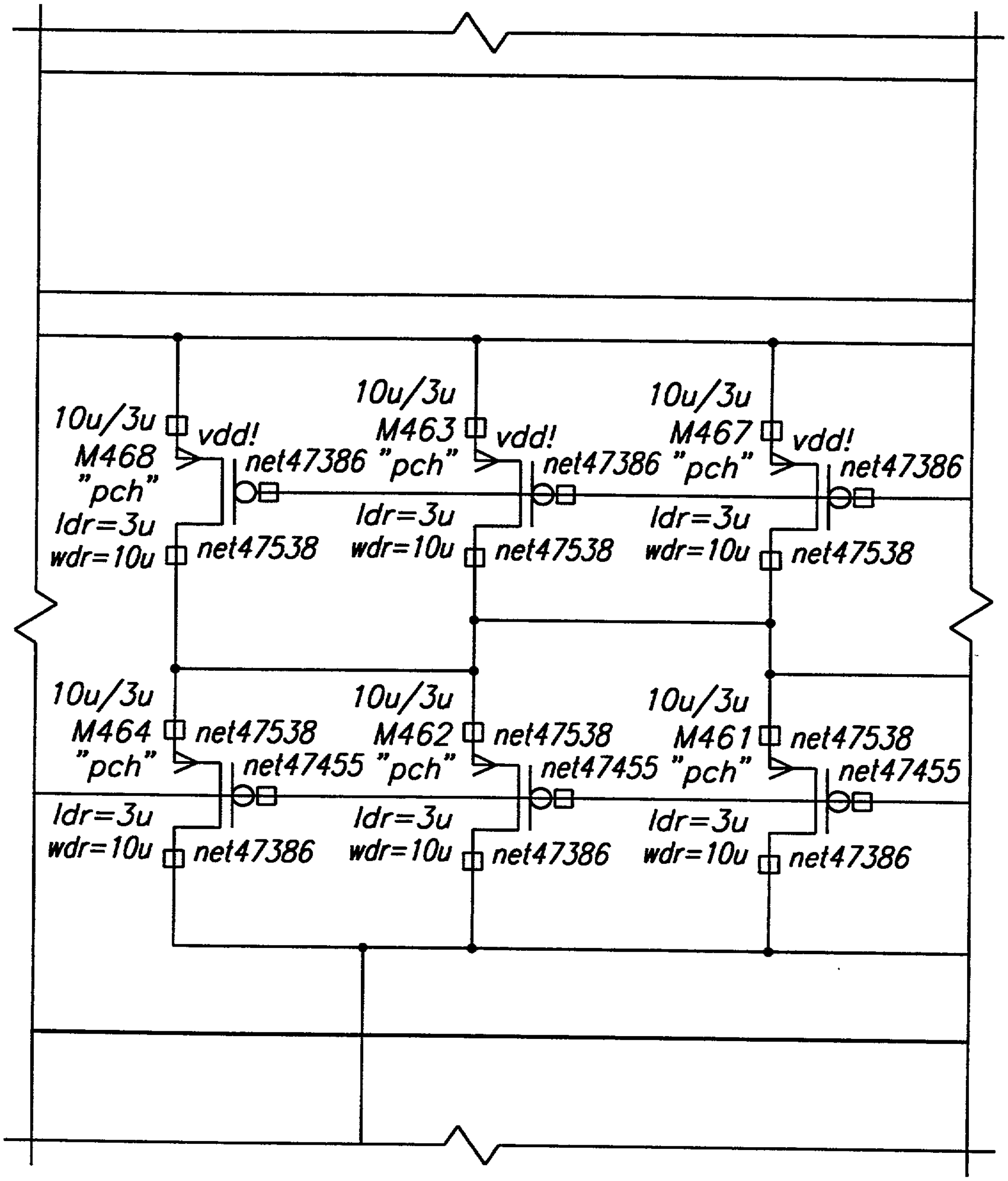

10u/3u
M468
"pch"
ldr=3u
wdr=10u
vdd!
net47386
net47538
10u/3u
M463
vdd!
net47386 "pch"
ldr=3u
wdr=10u
net47538
10u/3u
M467
vdd!
net47386 "pch"
net47386
ldr=3u
wdr=10u
net47538
10u/3u
M464
"pch"
net47538
net47455
ldr=3u
wdr=10u
net47386
10u/3u
M462
net47538
net47455 "pch"
ldr=3u
wdr=10u
net47386
10u/3u
M461
net47538
net47455 "pch"
net47455
ldr=3u
wdr=10u
net47386

Fig 16.01BB

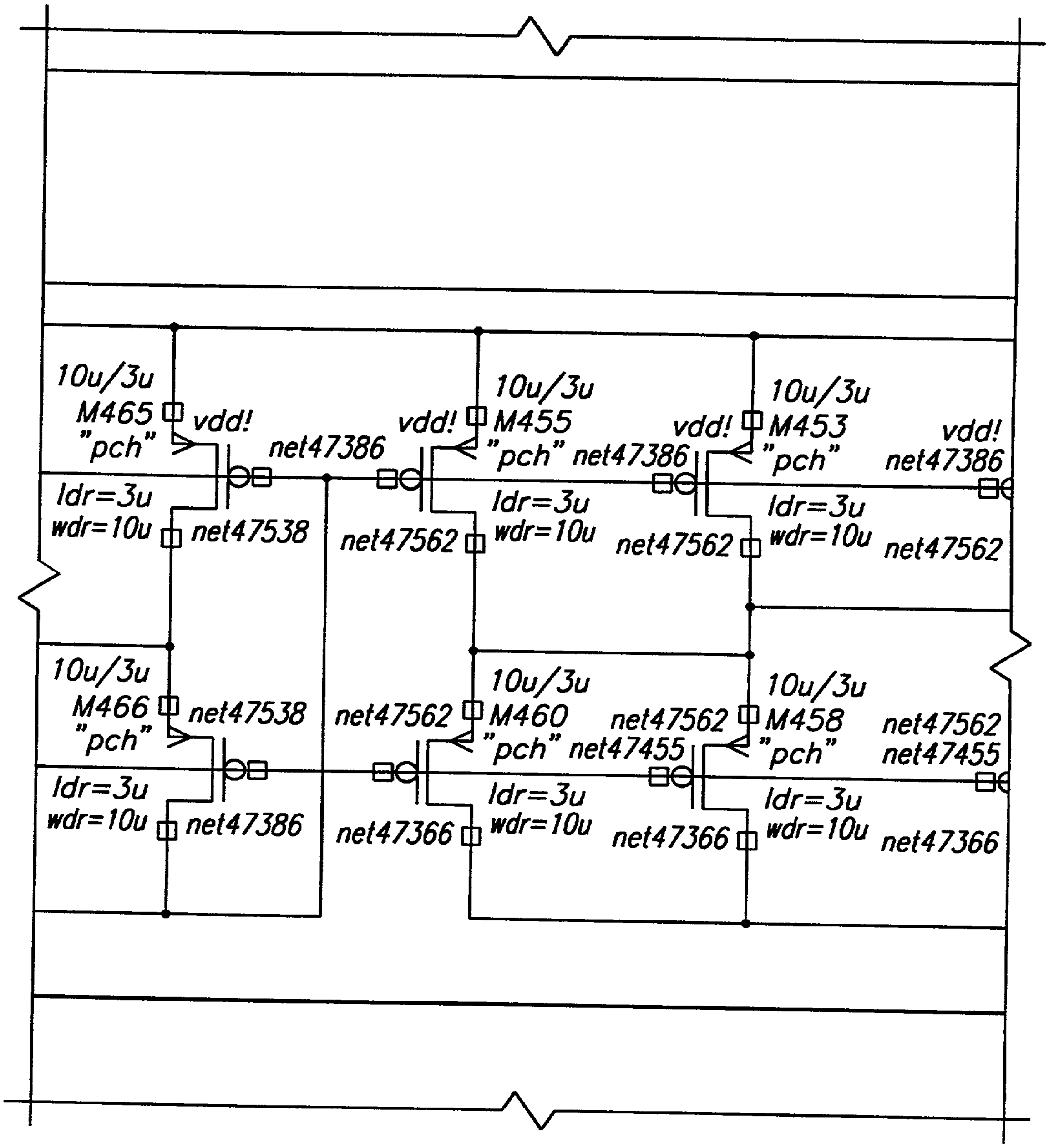

10u/3u
M465
"pch"
vdd!
ldr=3u
wdr=10u
net47538
net47386
vdd!
10u/3u
M455
"pch"
net47386
ldr=3u
wdr=10u
net47562
vdd!
10u/3u
M453
"pch"
ldr=3u
wdr=10u
net47562
vdd!
net47386
net47562
10u/3u
M466
"pch"
net47538
ldr=3u
wdr=10u
net47386
net47562
10u/3u
M460
"pch"
net47455
ldr=3u
wdr=10u
net47366
net47562
10u/3u
M458
"pch"
ldr=3u
wdr=10u
net47366
net47562
net47455
net47366

Fig 16.01BC

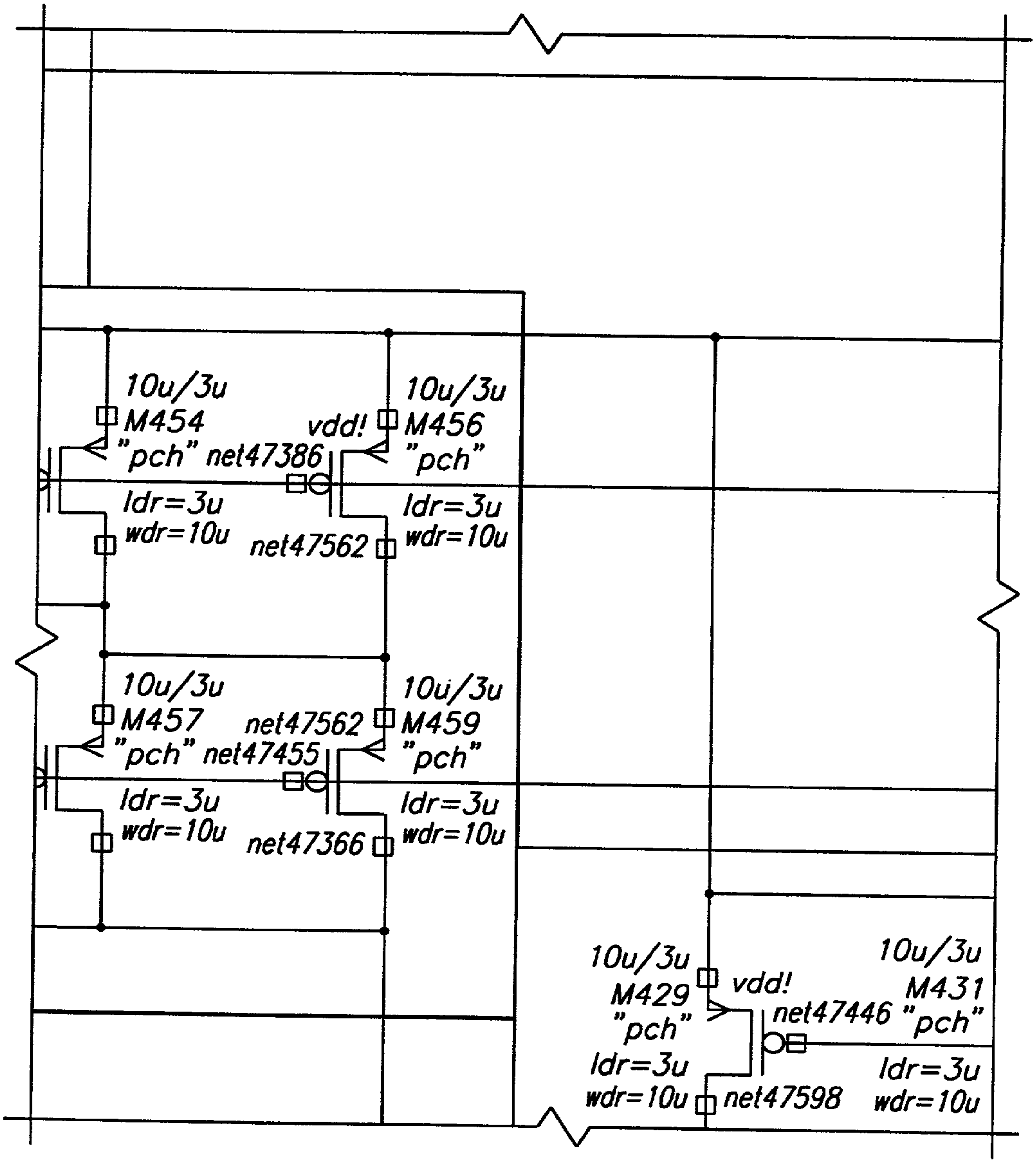

10u/3u
M454
"pch"
net47386
ldr=3u
wdr=10u
vdd!
10u/3u
M456
"pch"
net47562
ldr=3u
wdr=10u
10u/3u
M457
"pch"
net47455
ldr=3u
wdr=10u
net47562
10u/3u
M459
"pch"
net47366
ldr=3u
wdr=10u
10u/3u
M429
"pch"
ldr=3u
wdr=10u
vdd!
net47446
net47598
10u/3u
M431
"pch"
ldr=3u
wdr=10u

Fig 16.01BD

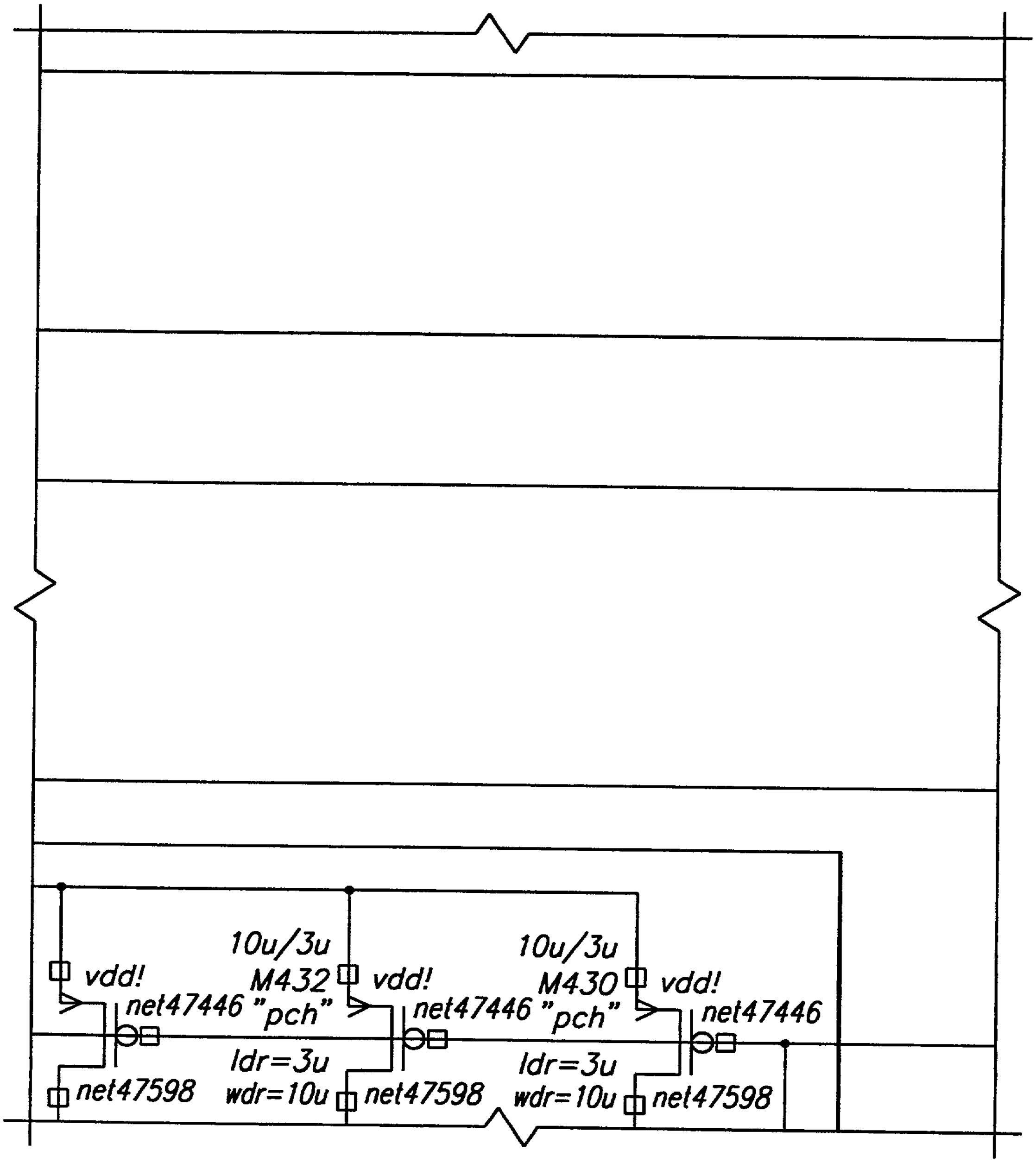

10u/3u
M432
vdd!
net47446
"pch"
ldr=3u
wdr=10u
net47598
10u/3u
M430
vdd!
net47446
"pch"
ldr=3u
wdr=10u
net47598
vdd!
net47446
net47598

Fig 16.01BE

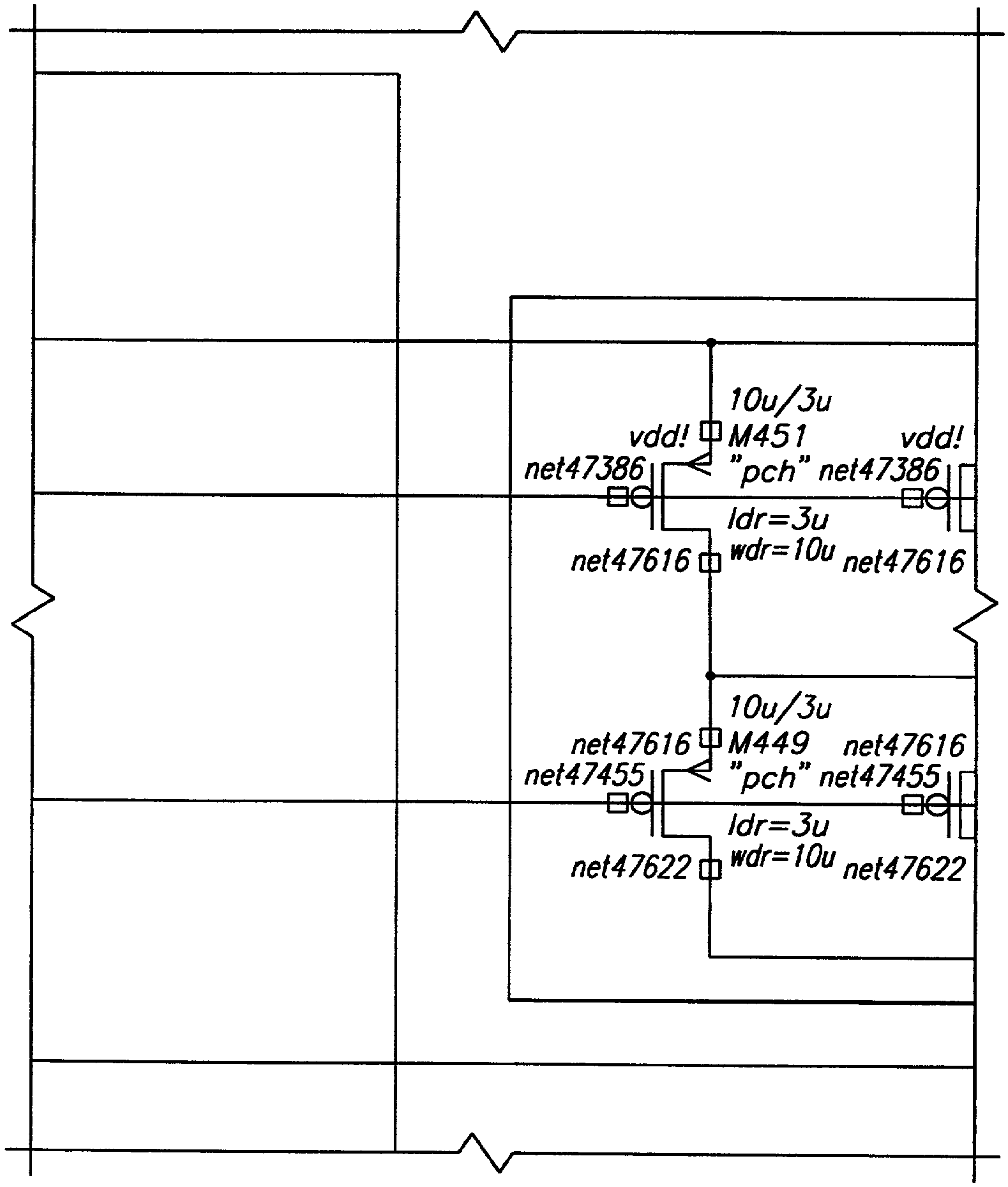

10u/3u
M451
"pch"
vdd!
vdd!
net47386
net47386
ldr=3u
wdr=10u
net47616
net47616
10u/3u
M449
"pch"
net47616
net47616
net47455
net47455
ldr=3u
wdr=10u
net47622
net47622

Fig 16.01BF

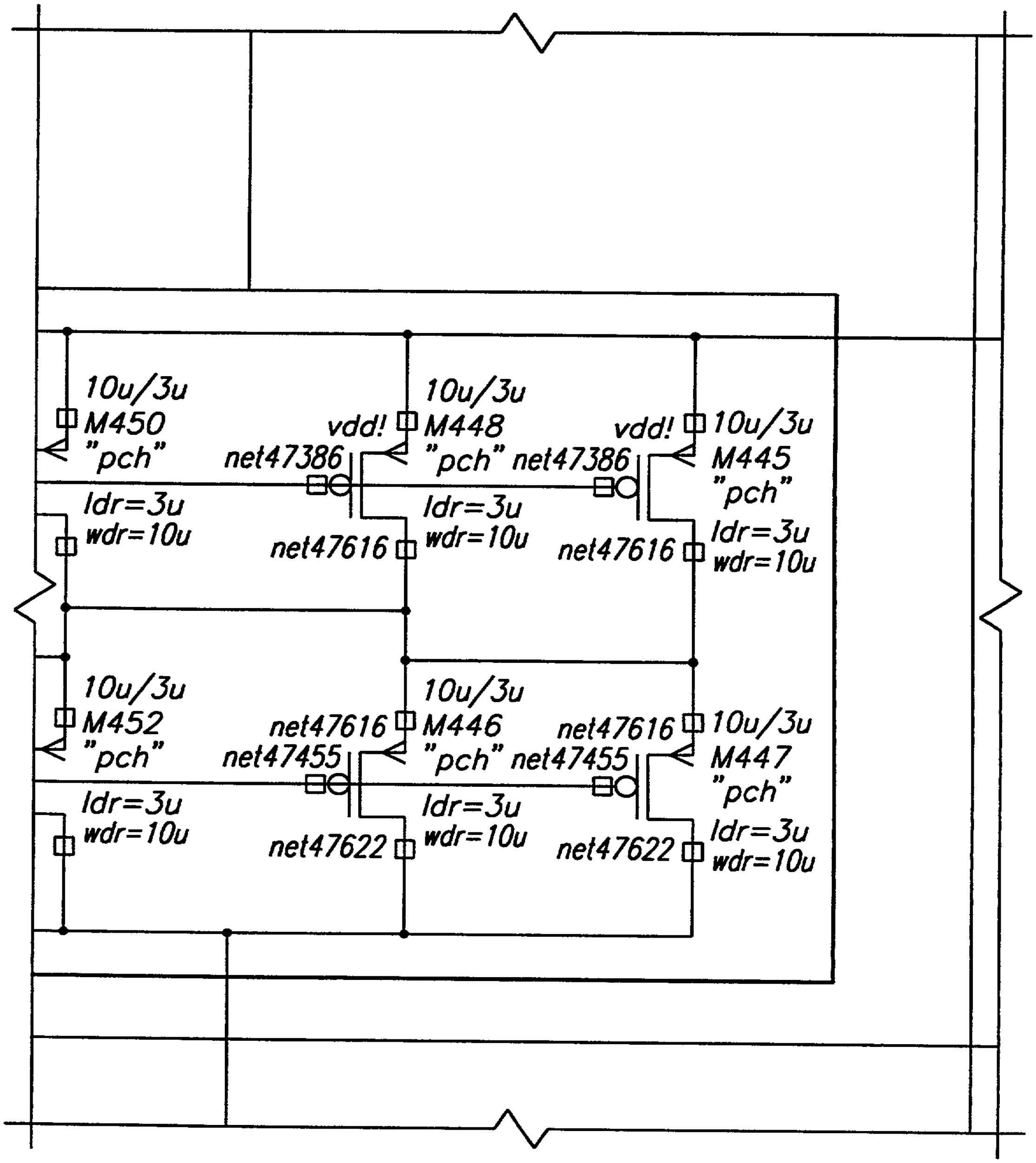

10u/3u
M450
"pch"
ldr=3u
wdr=10u
10u/3u
vdd!
M448
net47386
"pch"
net47616
ldr=3u
wdr=10u
vdd!
10u/3u
net47386
M445
"pch"
ldr=3u
net47616
wdr=10u
10u/3u
M452
"pch"
ldr=3u
wdr=10u
10u/3u
net47616
M446
net47455
"pch"
net47622
ldr=3u
wdr=10u
net47616
10u/3u
net47455
M447
"pch"
ldr=3u
net47622
wdr=10u

Fig 16.01BG

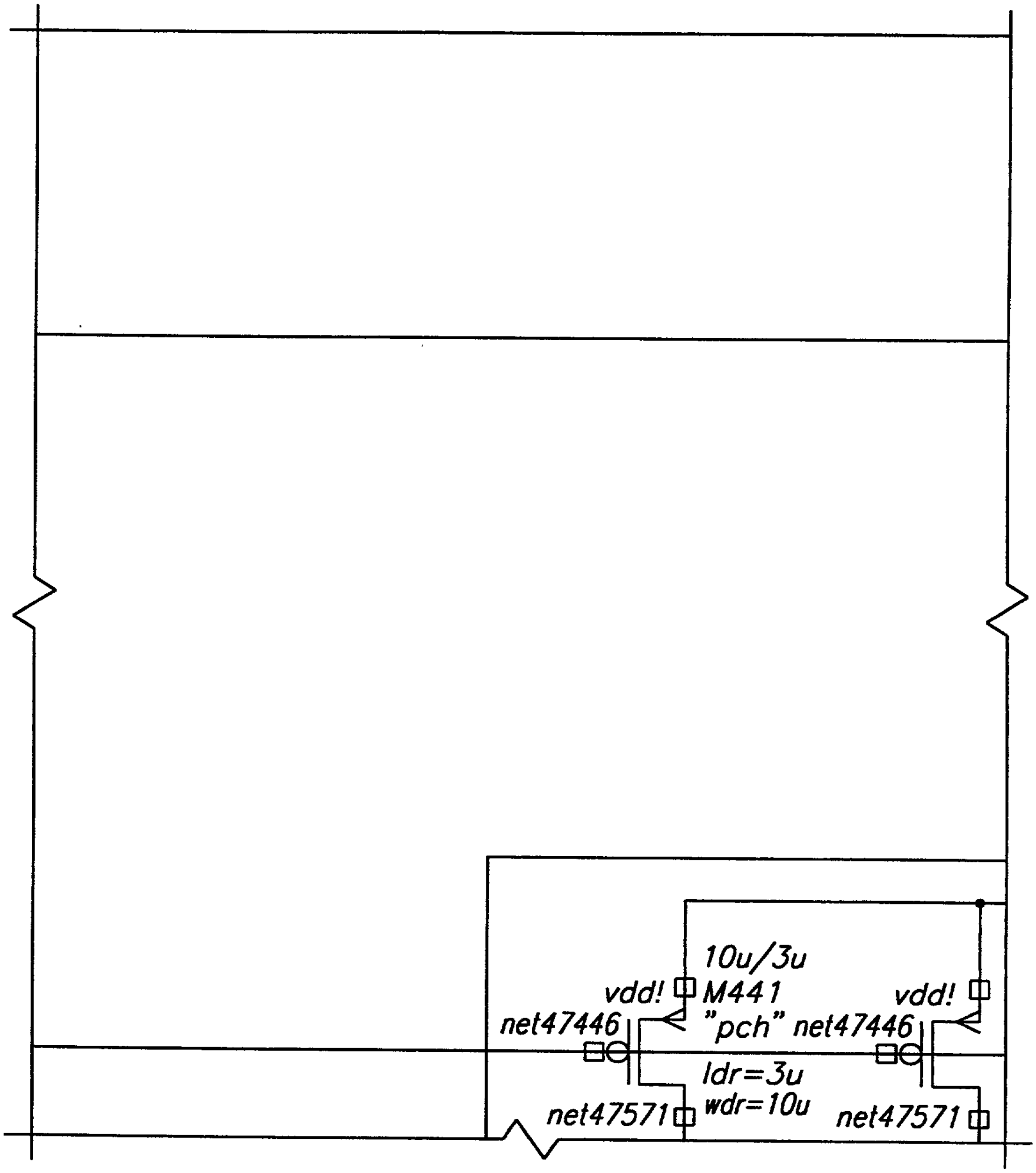

10u/3u
vdd!
M441
"pch"
net47446
vdd!
net47446
ldr=3u
wdr=10u
net47571
net47571

Fig 16.01BH

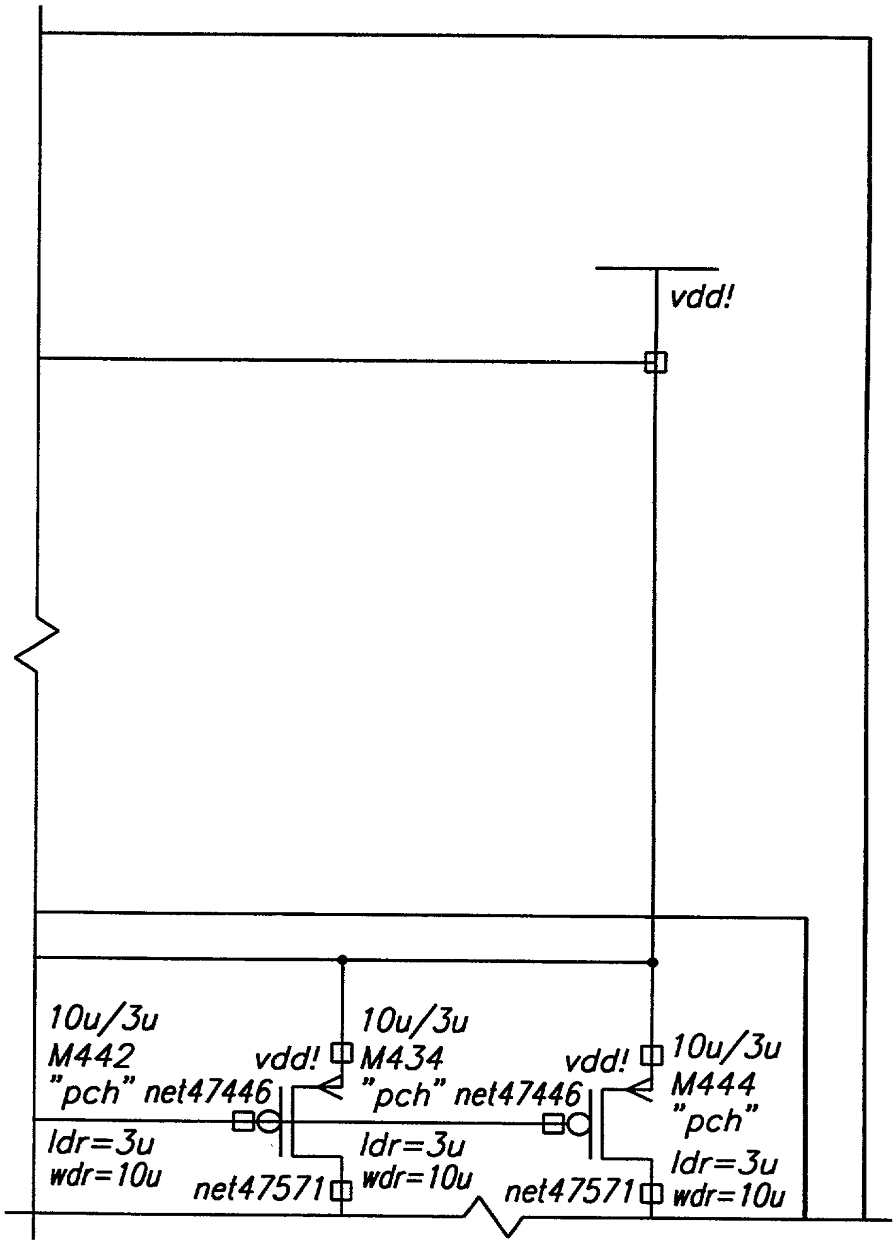

vdd!
10u/3u
M442
"pch"
net47446
ldr=3u
wdr=10u
vdd!
10u/3u
M434
"pch"
net47446
ldr=3u
wdr=10u
net47571
vdd!
10u/3u
M444
"pch"
ldr=3u
wdr=10u
net47571

Fig 16.01BI

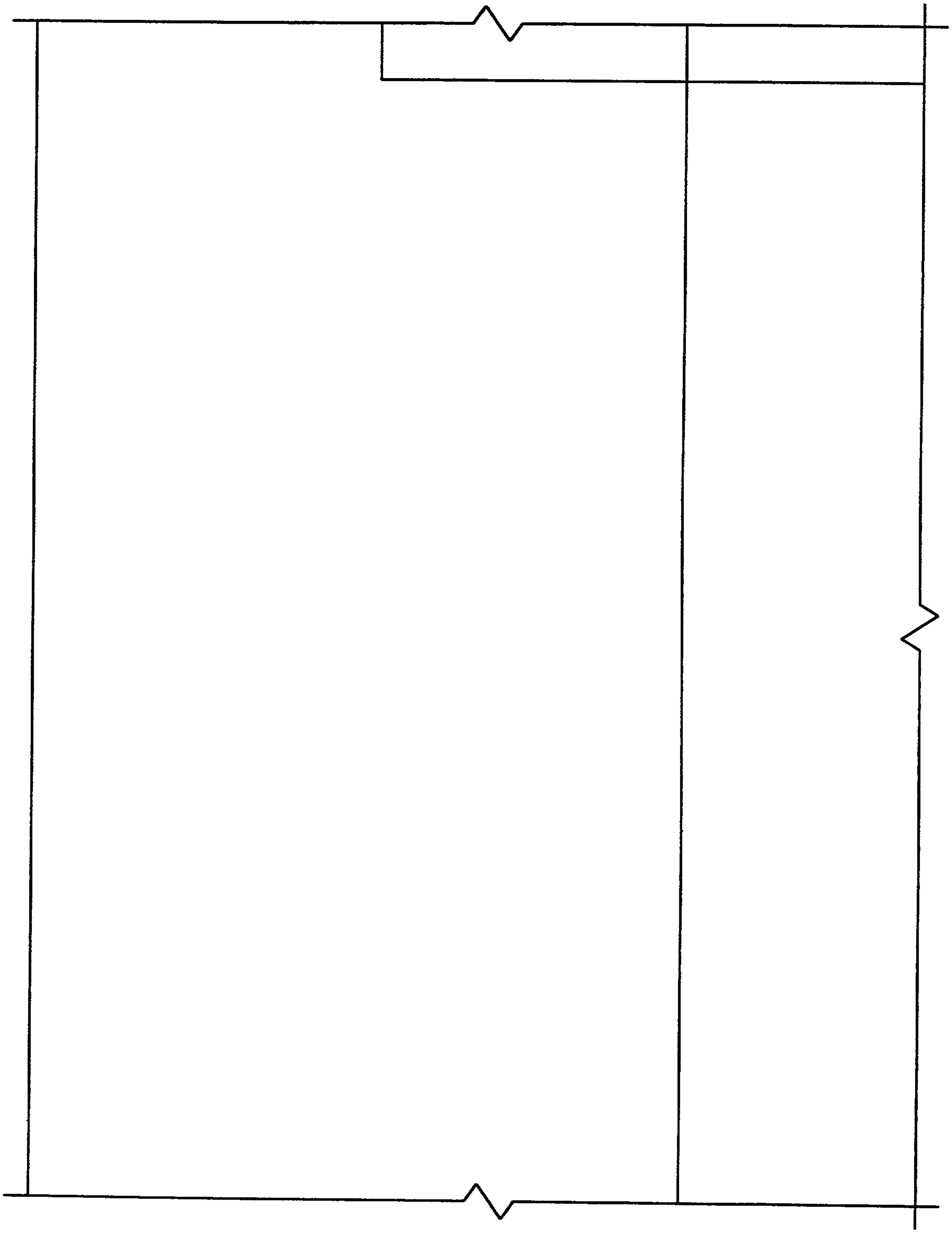


Fig 16.01CA

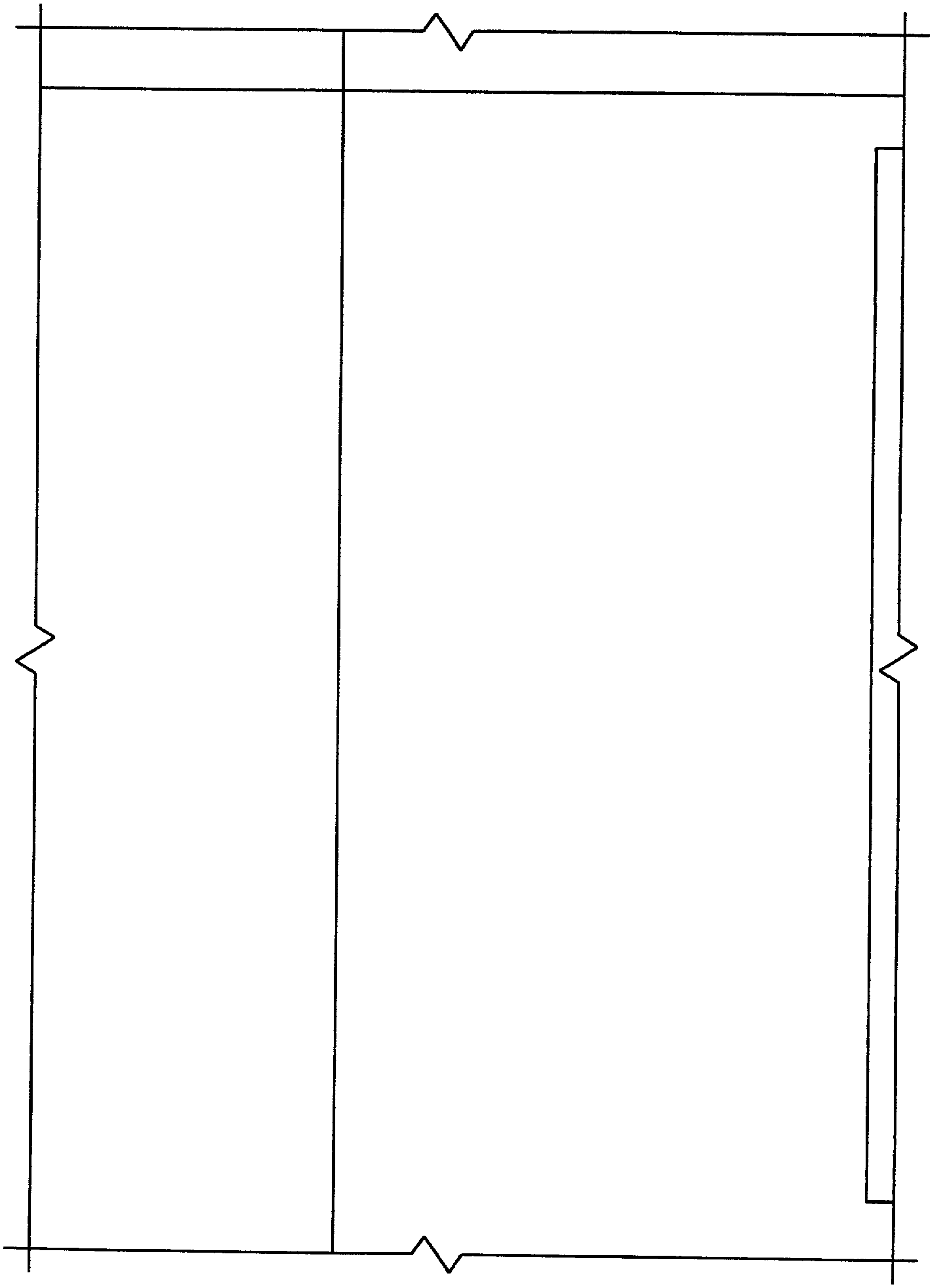


Fig 16.01CB

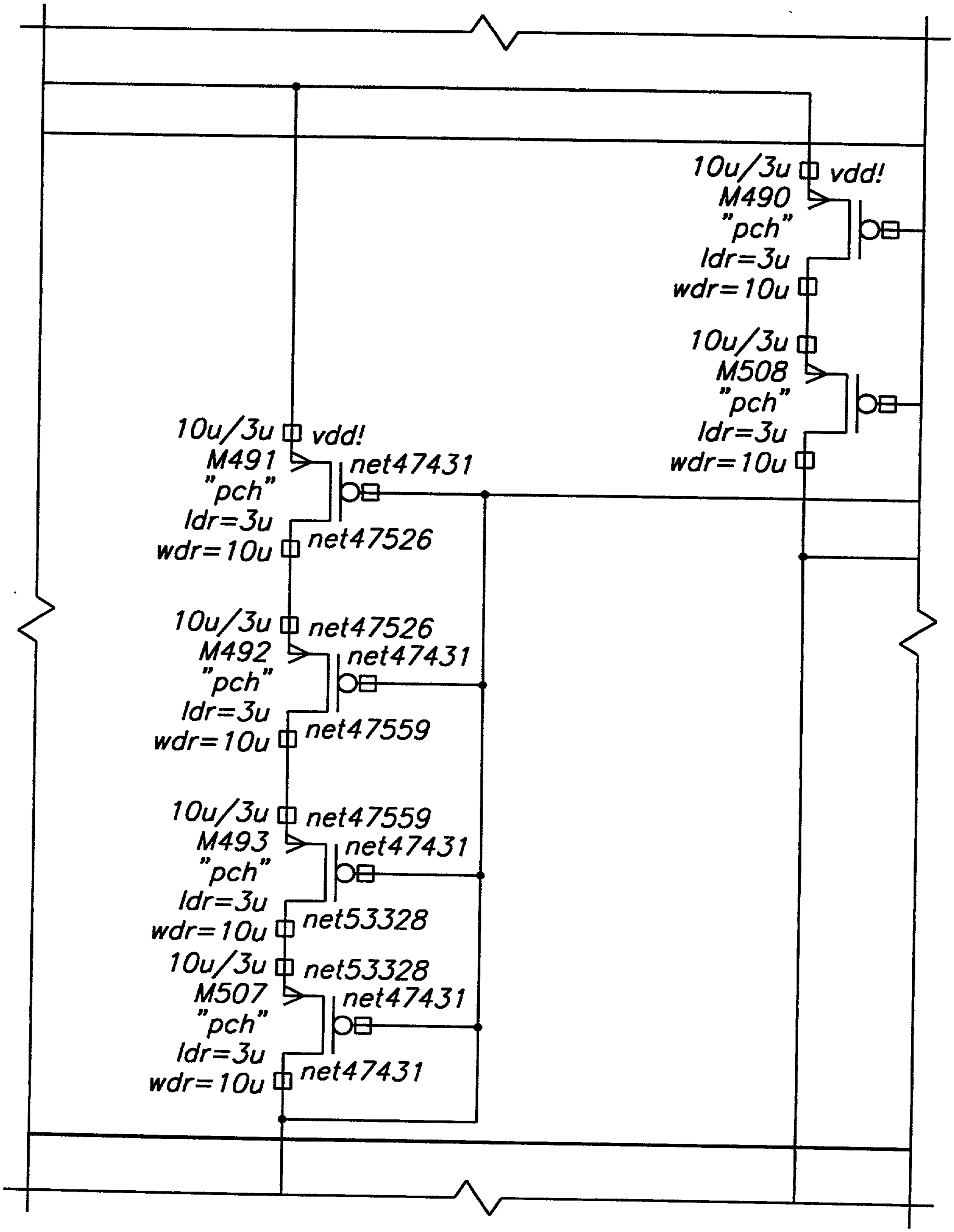

10u/3u
vdd!
M490
"pch"
ldr=3u
wdr=10u
10u/3u
M508
"pch"
ldr=3u
wdr=10u
10u/3u
vdd!
M491
net47431
"pch"
ldr=3u
net47526
wdr=10u
10u/3u
net47526
M492
net47431
"pch"
ldr=3u
net47559
wdr=10u
10u/3u
net47559
M493
net47431
"pch"
ldr=3u
net53328
wdr=10u
10u/3u
net53328
M507
net47431
"pch"
ldr=3u
net47431
wdr=10u

Fig 16.01CC

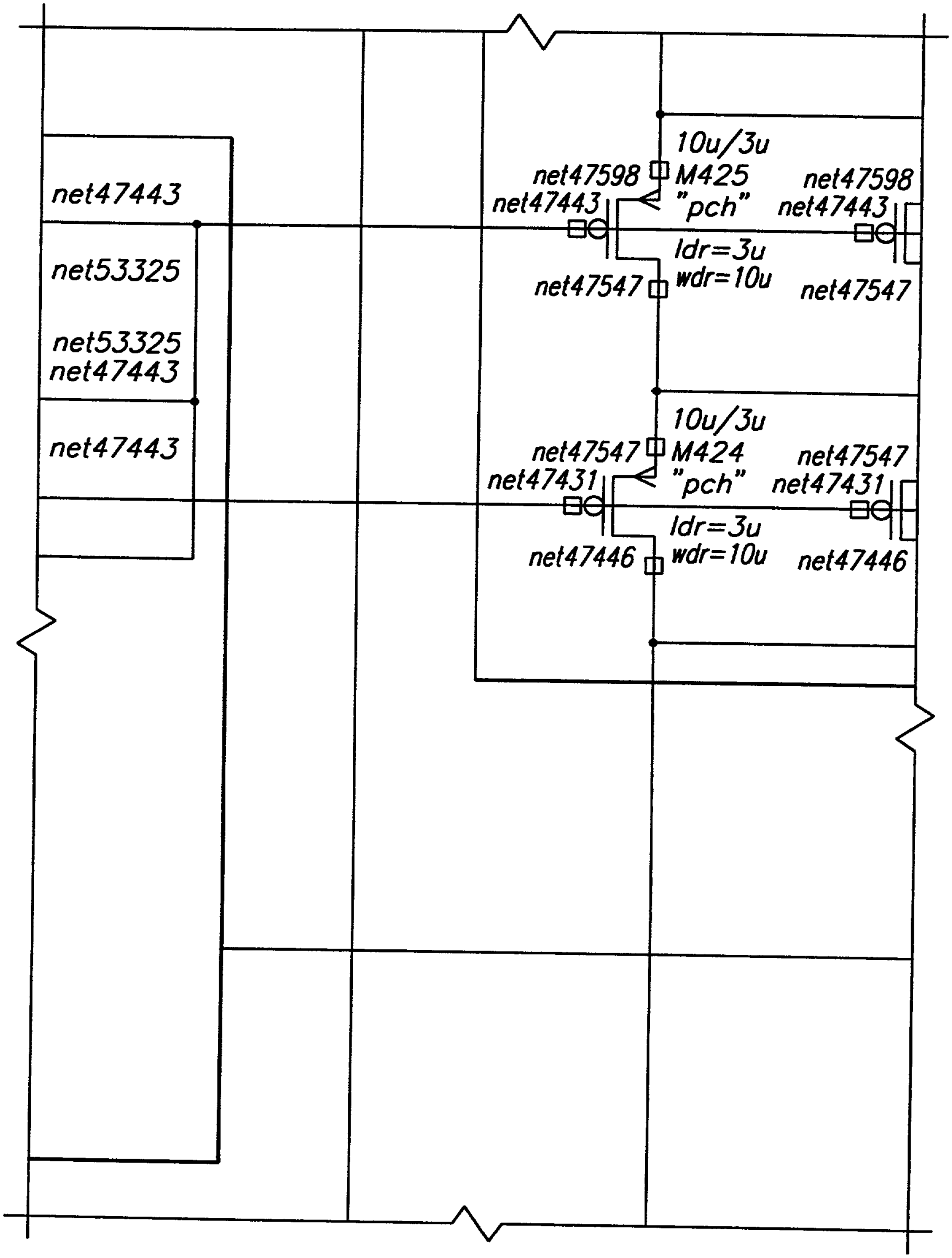

net47443
net53325
net53325
net47443
net47443
10u/3u
M425
"pch"
net47598
net47443
ldr=3u
wdr=10u
net47547
net47598
net47443
net47547
10u/3u
M424
"pch"
net47547
net47431
ldr=3u
wdr=10u
net47446
net47547
net47431
net47446

Fig 16.DICD

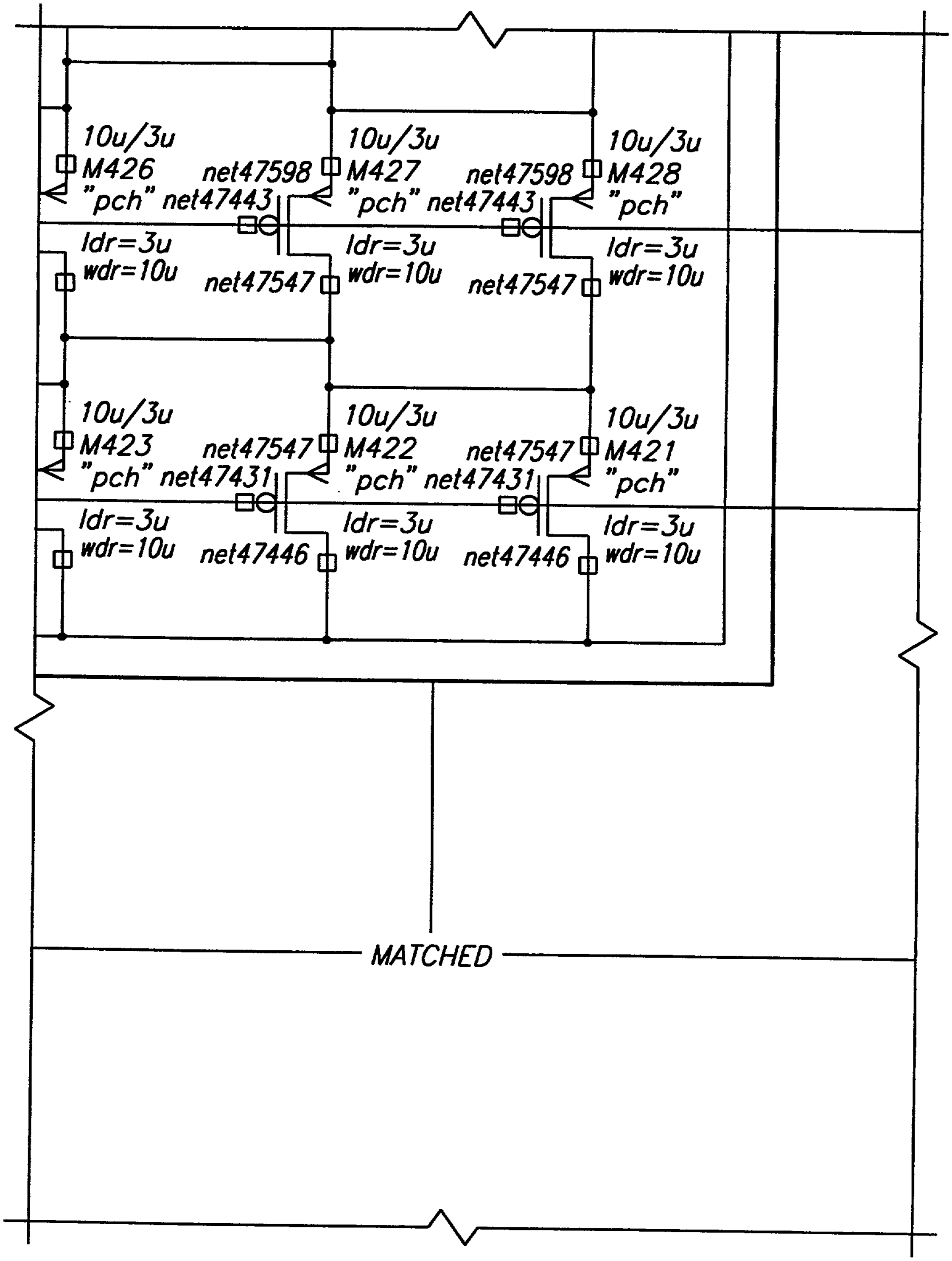

10u/3u
M426
"pch"
ldr=3u
wdr=10u
net47598
net47443
net47547
10u/3u
M427
"pch"
ldr=3u
wdr=10u
net47598
net47443
net47547
10u/3u
M428
"pch"
ldr=3u
wdr=10u
10u/3u
M423
"pch"
ldr=3u
wdr=10u
net47547
net47431
net47446
10u/3u
M422
"pch"
ldr=3u
wdr=10u
net47547
net47431
net47446
10u/3u
M421
"pch"
ldr=3u
wdr=10u
MATCHED

Fig 16.01CE

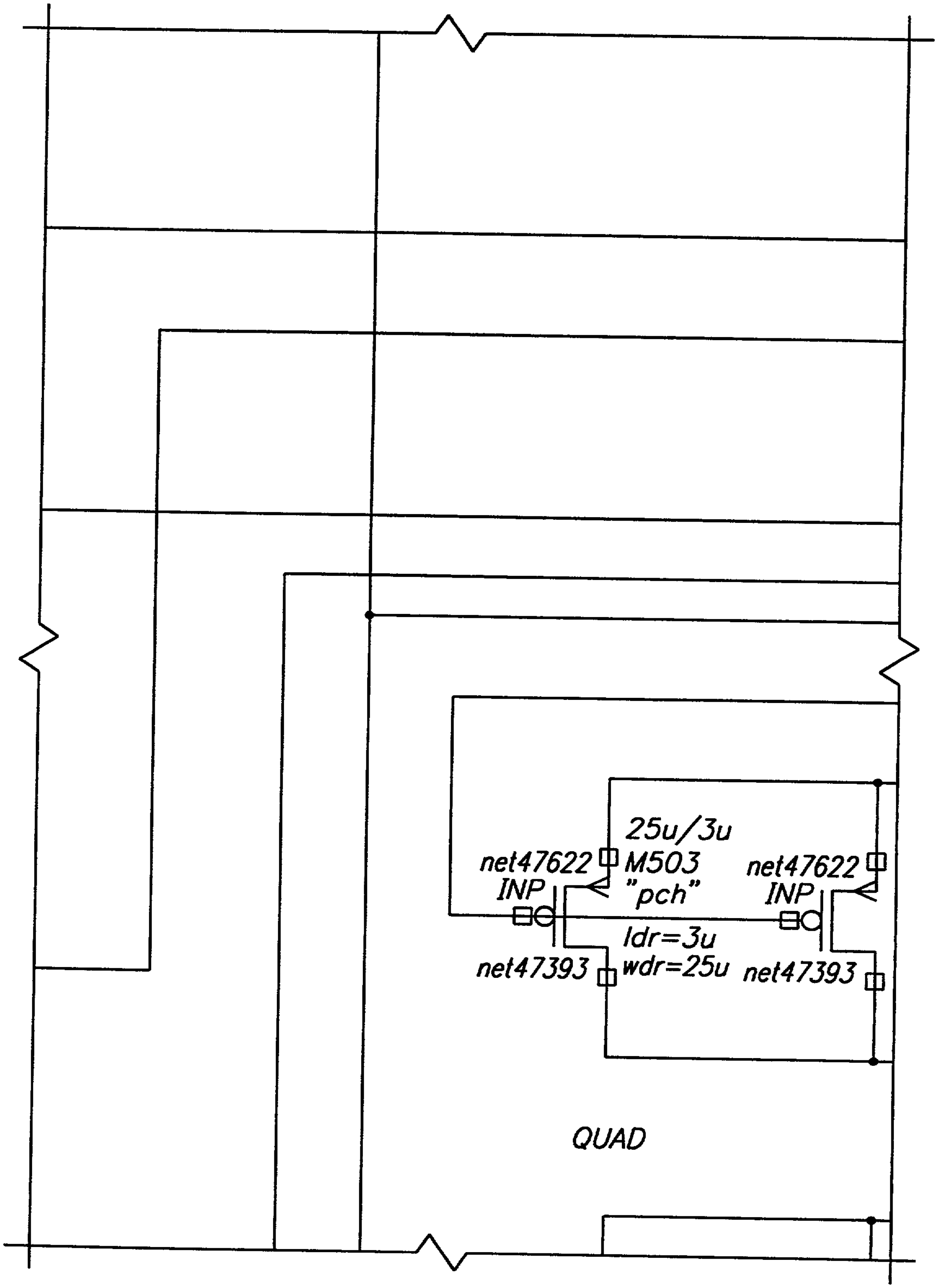

25u/3u
M503
"pch"
net47622
INP
ldr=3u
wdr=25u
net47393
net47622
INP
net47393
QUAD

Fig 16.01CF

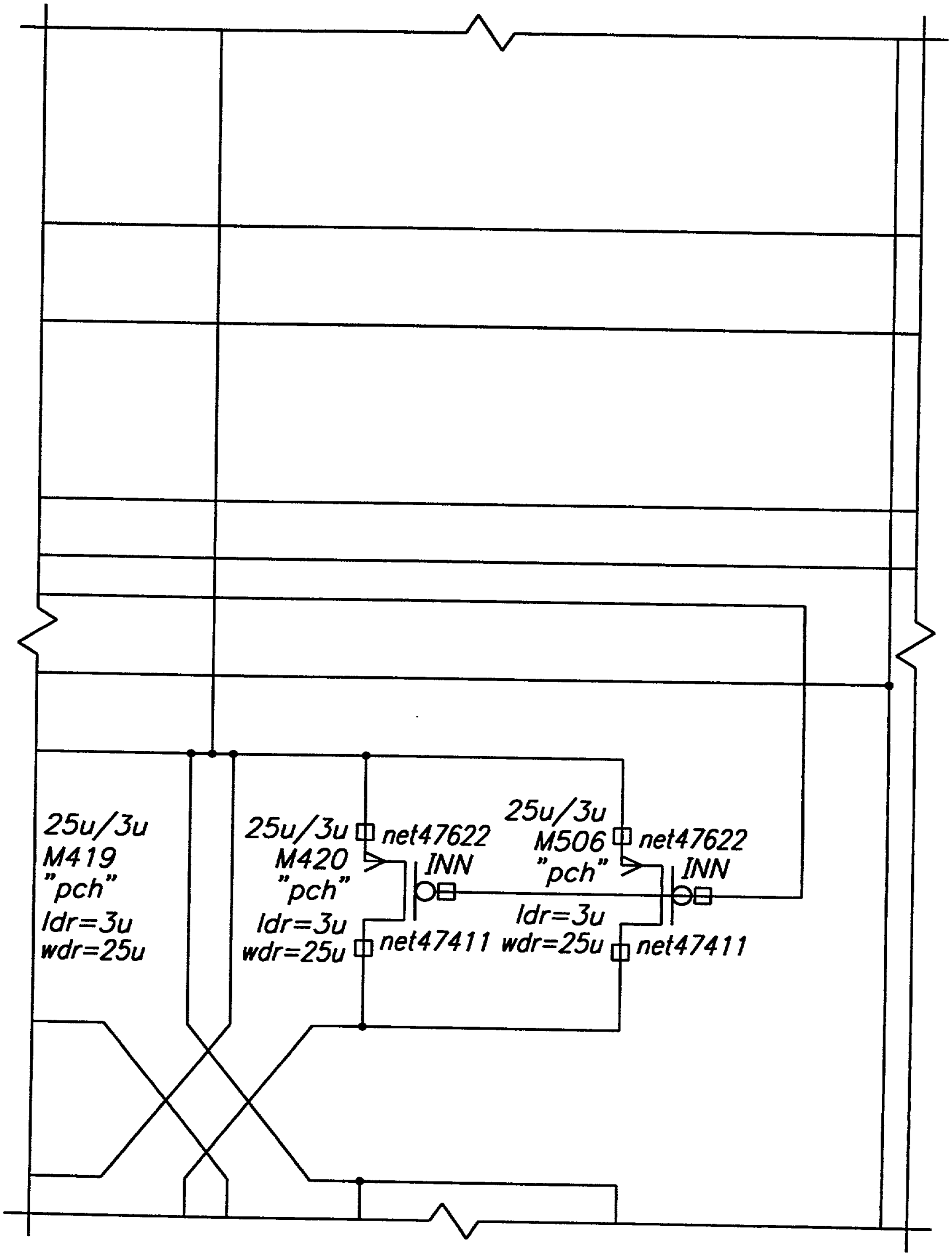

25u/3u
M419
"pch"
ldr=3u
wdr=25u
25u/3u
M420
"pch"
ldr=3u
wdr=25u
net47622
INN
net47411
25u/3u
M506
"pch"
ldr=3u
wdr=25u
net47622
INN
net47411

Fig 16.01CG

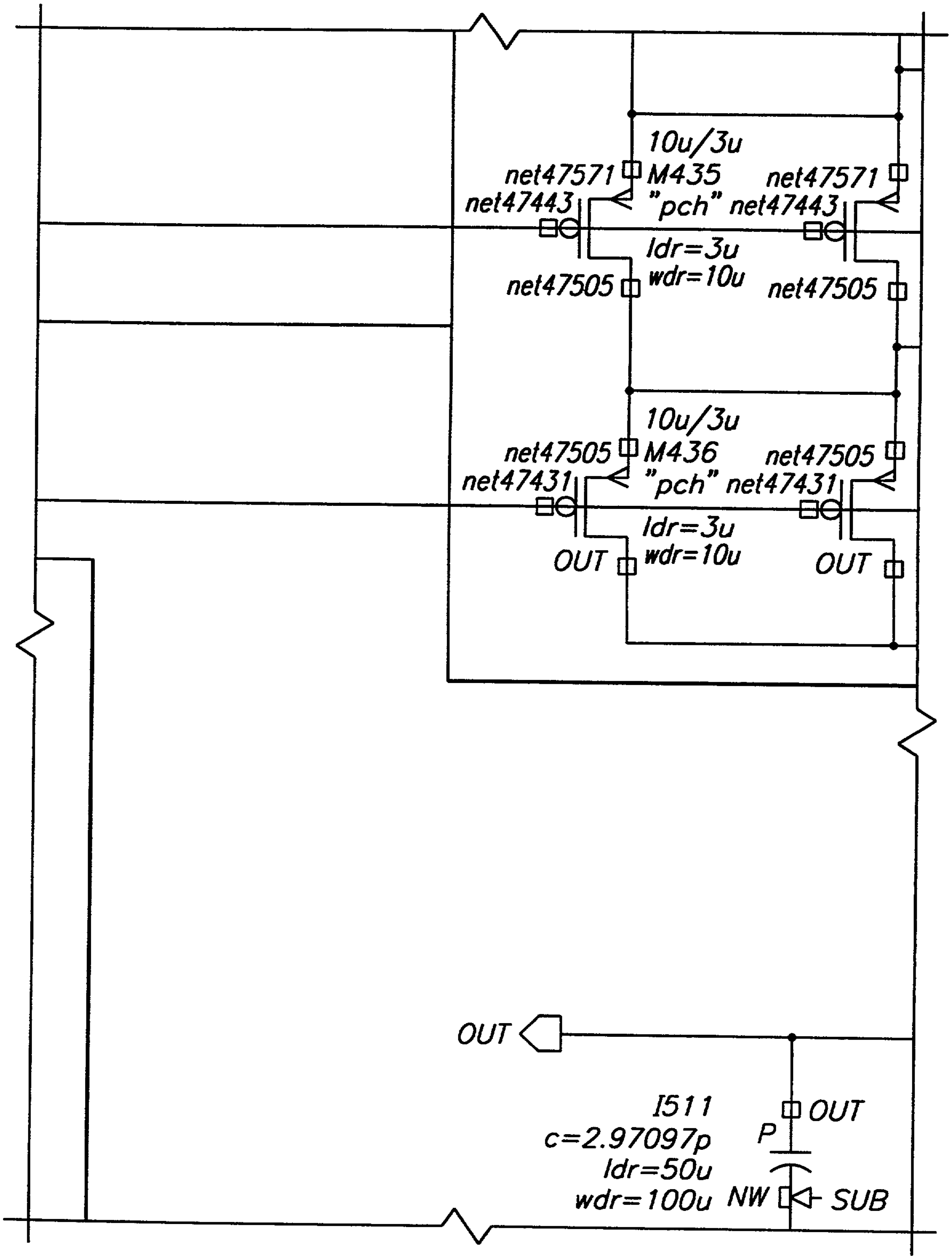

10u/3u
M435
"pch"
net47571
net47443
ldr=3u
wdr=10u
net47505
net47571
net47443
net47505
10u/3u
M436
"pch"
net47505
net47431
ldr=3u
wdr=10u
OUT
net47505
net47431
OUT
OUT
I511
c=2.97097p
ldr=50u
wdr=100u
OUT
P
NW
SUB

Fig 16.DICH

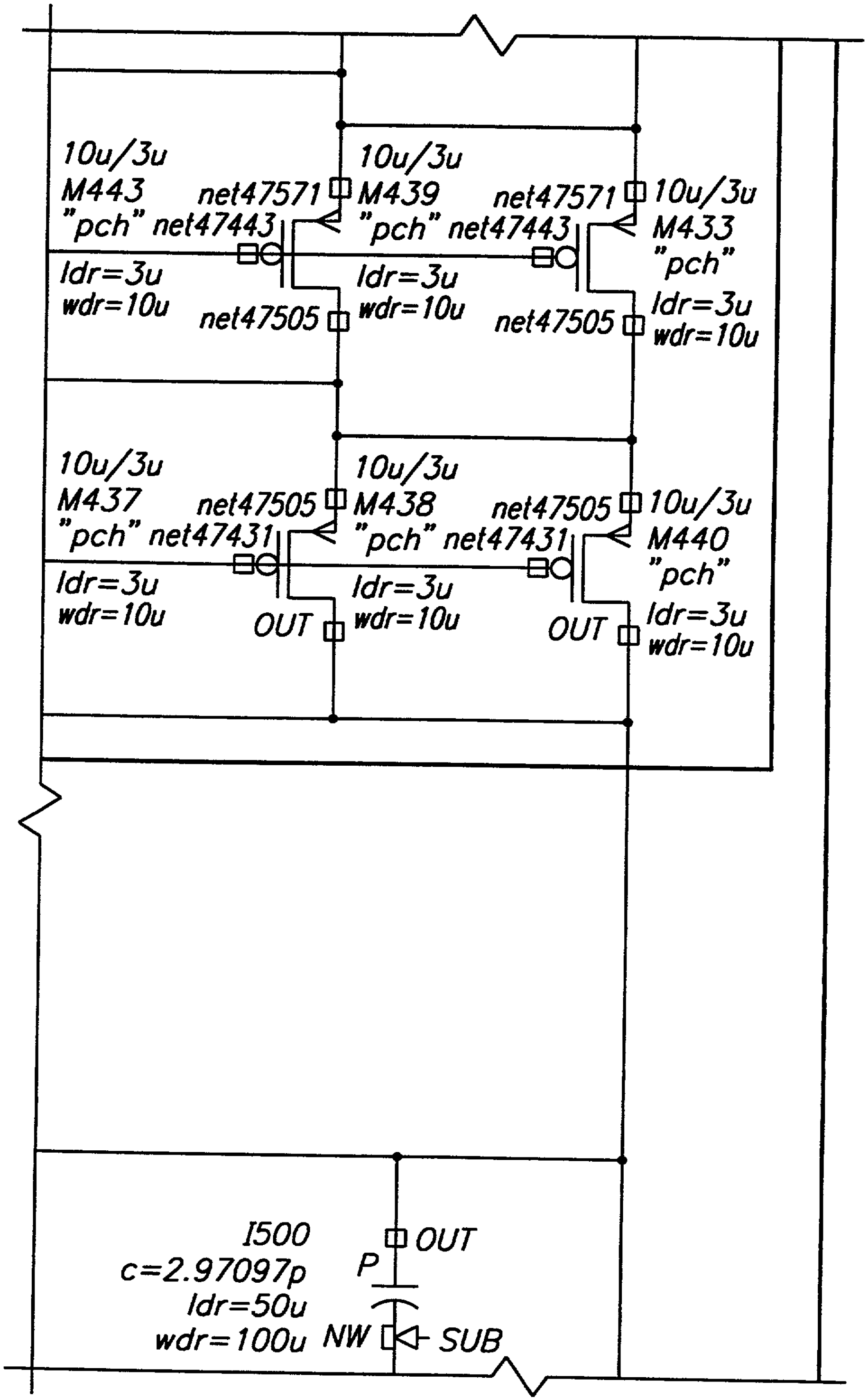

10u/3u
M443
"pch"
net47571
net47443
ldr=3u
wdr=10u
net47505
10u/3u
M439
"pch"
net47571
net47443
ldr=3u
wdr=10u
net47505
10u/3u
M433
"pch"
ldr=3u
wdr=10u
10u/3u
M437
"pch"
net47505
net47431
ldr=3u
wdr=10u
OUT
10u/3u
M438
"pch"
net47505
net47431
ldr=3u
wdr=10u
OUT
10u/3u
M440
"pch"
ldr=3u
wdr=10u
I500
c=2.97097p
ldr=50u
wdr=100u
OUT
P
NW
SUB

Fig 16.D1CI

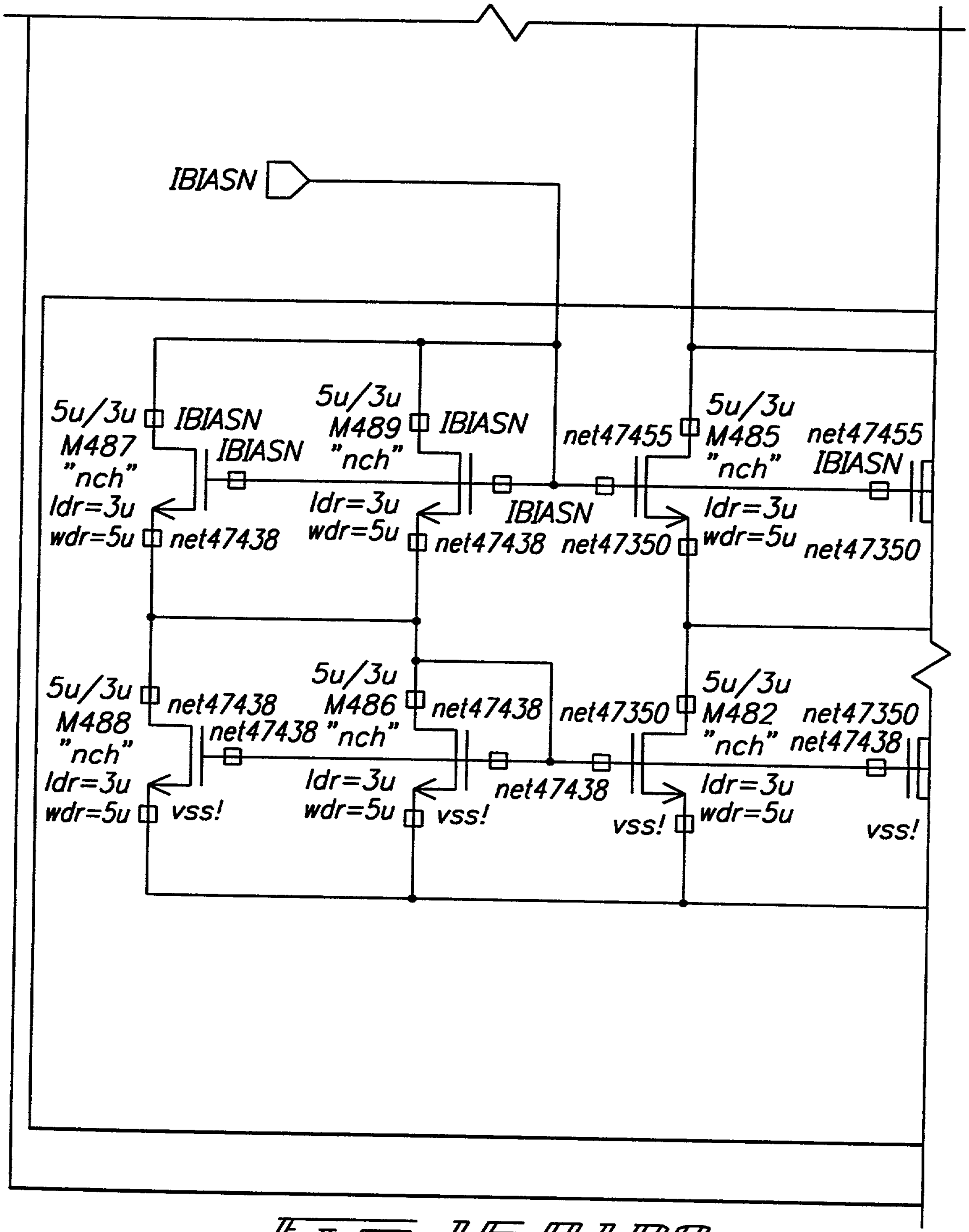

IBIASN
5u/3u
M487
"nch"
ldr=3u
wdr=5u
IBIASN
IBIASN
net47438
5u/3u
M489
"nch"
ldr=3u
wdr=5u
IBIASN
net47438
IBIASN
net47455
net47350
5u/3u
M485
"nch"
ldr=3u
wdr=5u
net47455
IBIASN
net47350
5u/3u
M488
"nch"
ldr=3u
wdr=5u
net47438
net47438
vss!
5u/3u
M486
"nch"
ldr=3u
wdr=5u
net47438
vss!
net47438
net47350
vss!
5u/3u
M482
"nch"
ldr=3u
wdr=5u
net47350
net47438
vss!

Fig 16.01DA

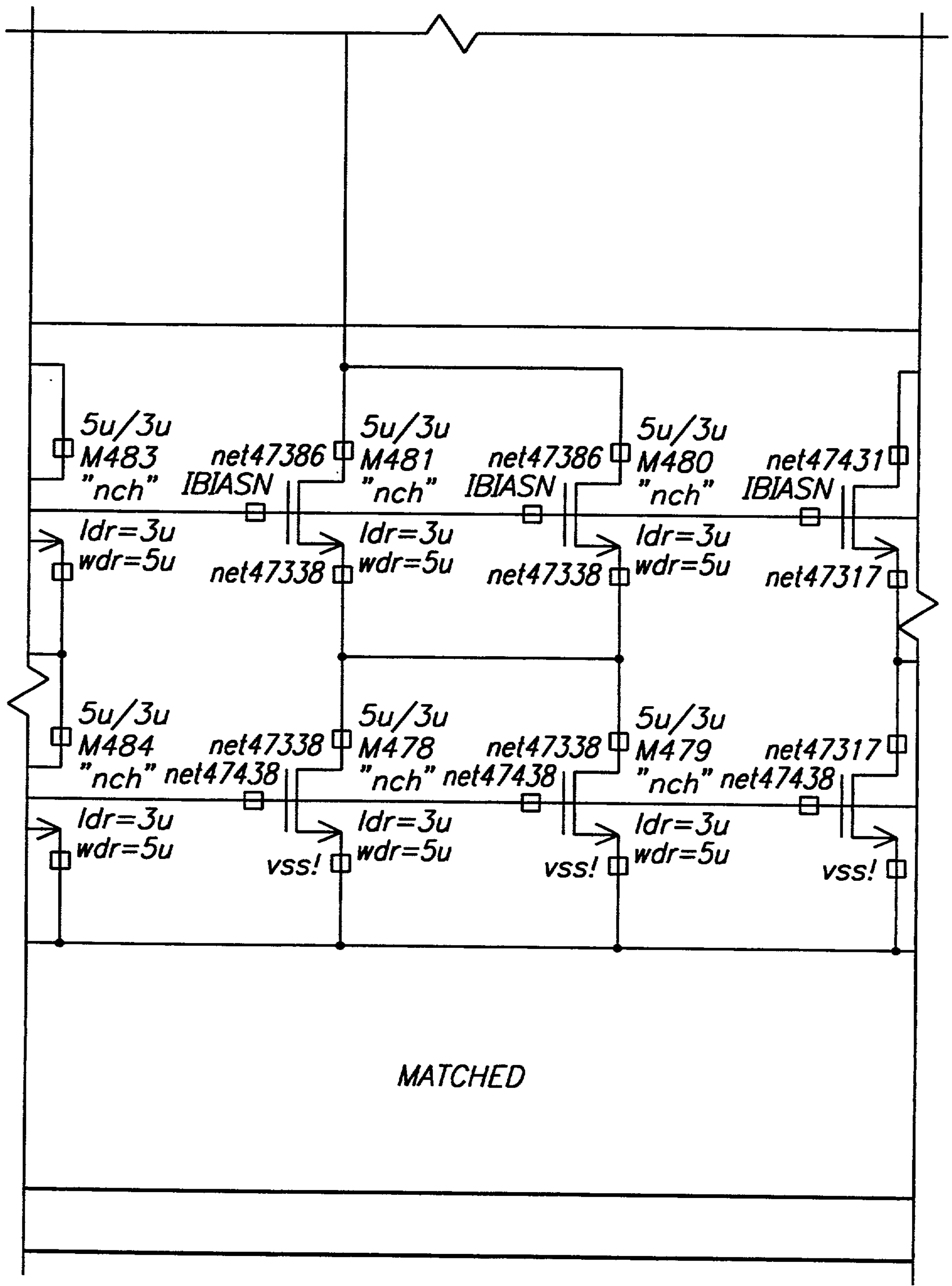

5u/3u
M483
"nch"
ldr=3u
wdr=5u
net47386
IBIASN
net47338
5u/3u
M481
"nch"
ldr=3u
wdr=5u
net47386
IBIASN
net47338
5u/3u
M480
"nch"
ldr=3u
wdr=5u
net47431
IBIASN
net47317
5u/3u
M484
"nch"
ldr=3u
wdr=5u
net47338
net47438
vss!
5u/3u
M478
"nch"
ldr=3u
wdr=5u
net47338
net47438
vss!
5u/3u
M479
"nch"
ldr=3u
wdr=5u
net47317
net47438
vss!
MATCHED

Fig 16.01DB

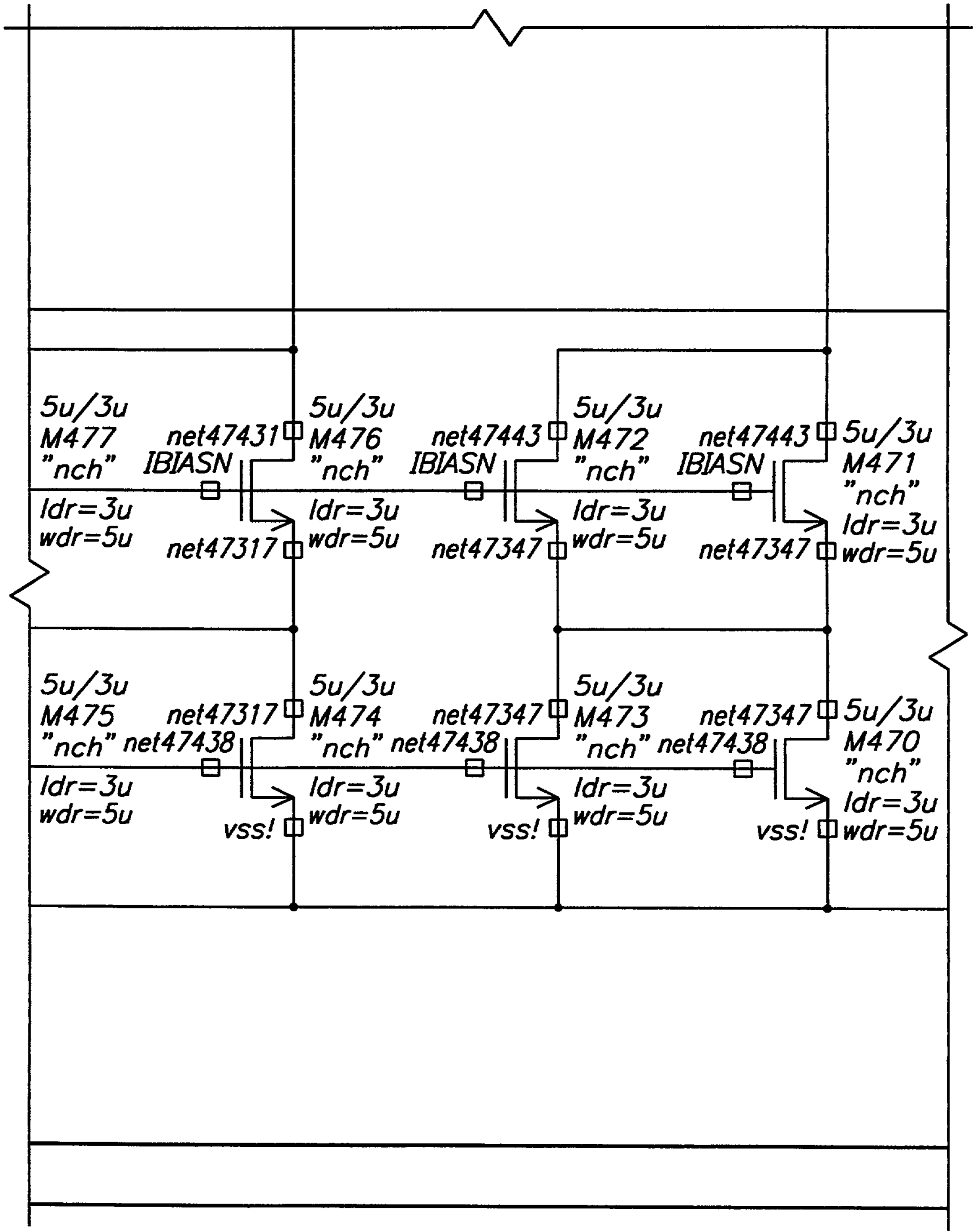

5u/3u
M477
"nch"
ldr=3u
wdr=5u
net47431
IBIASN
net47317
5u/3u
M476
"nch"
ldr=3u
wdr=5u
net47443
IBIASN
net47347
5u/3u
M472
"nch"
ldr=3u
wdr=5u
net47443
IBIASN
net47347
5u/3u
M471
"nch"
ldr=3u
wdr=5u
5u/3u
M475
"nch"
ldr=3u
wdr=5u
net47317
net47438
vss!
5u/3u
M474
"nch"
ldr=3u
wdr=5u
net47347
net47438
vss!
5u/3u
M473
"nch"
ldr=3u
wdr=5u
net47347
net47438
vss!
5u/3u
M470
"nch"
ldr=3u
wdr=5u

Fig 16.01DC

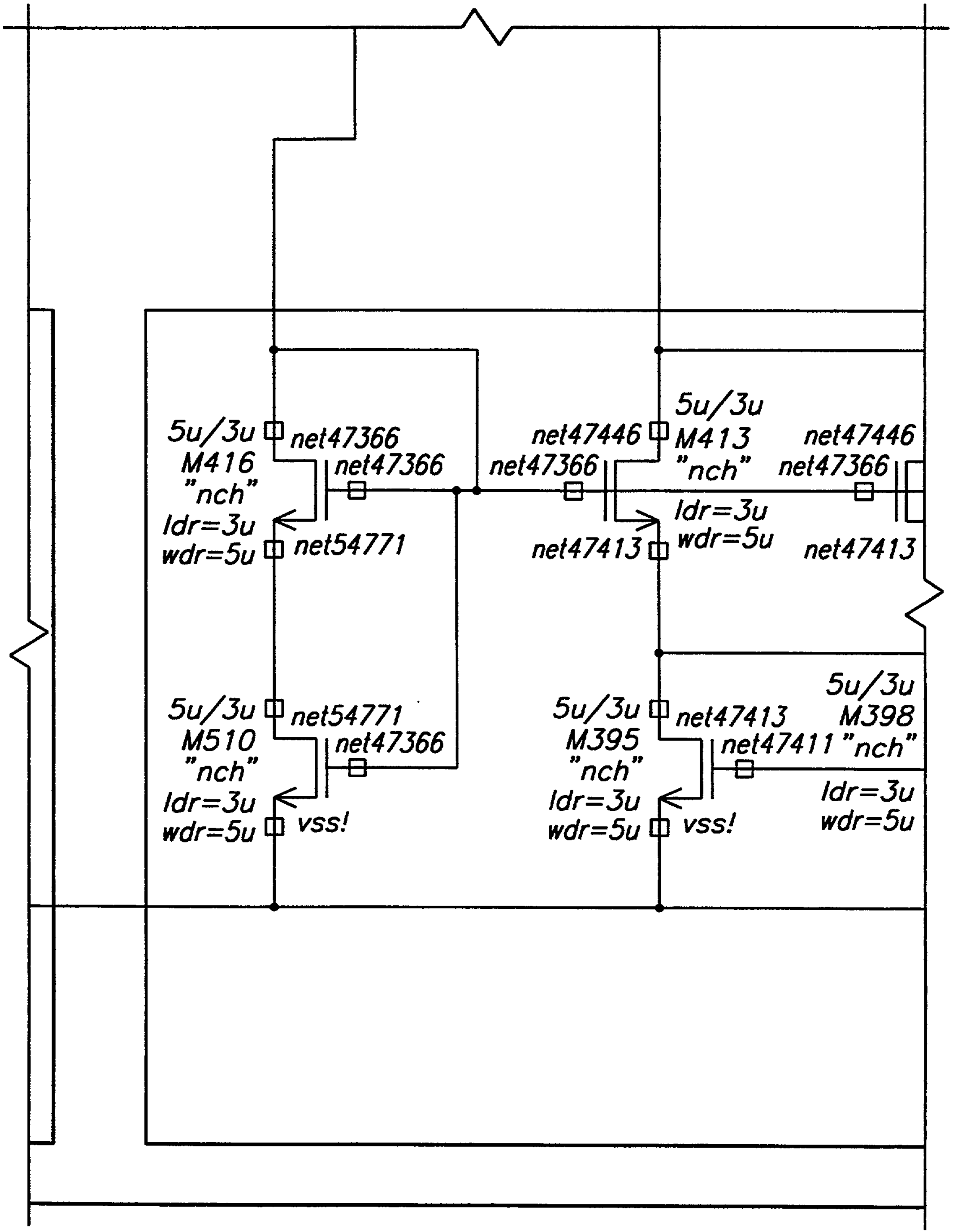

5u/3u
M416
"nch"
ldr=3u
wdr=5u
net47366
net47366
net54771
5u/3u
M510
"nch"
ldr=3u
wdr=5u
net54771
net47366
vss!
net47446
net47366
net47413
5u/3u
M413
"nch"
ldr=3u
wdr=5u
net47446
net47366
net47413
5u/3u
M395
"nch"
ldr=3u
wdr=5u
net47413
net47411
vss!
5u/3u
M398
"nch"
ldr=3u
wdr=5u

Fig 16.01DD

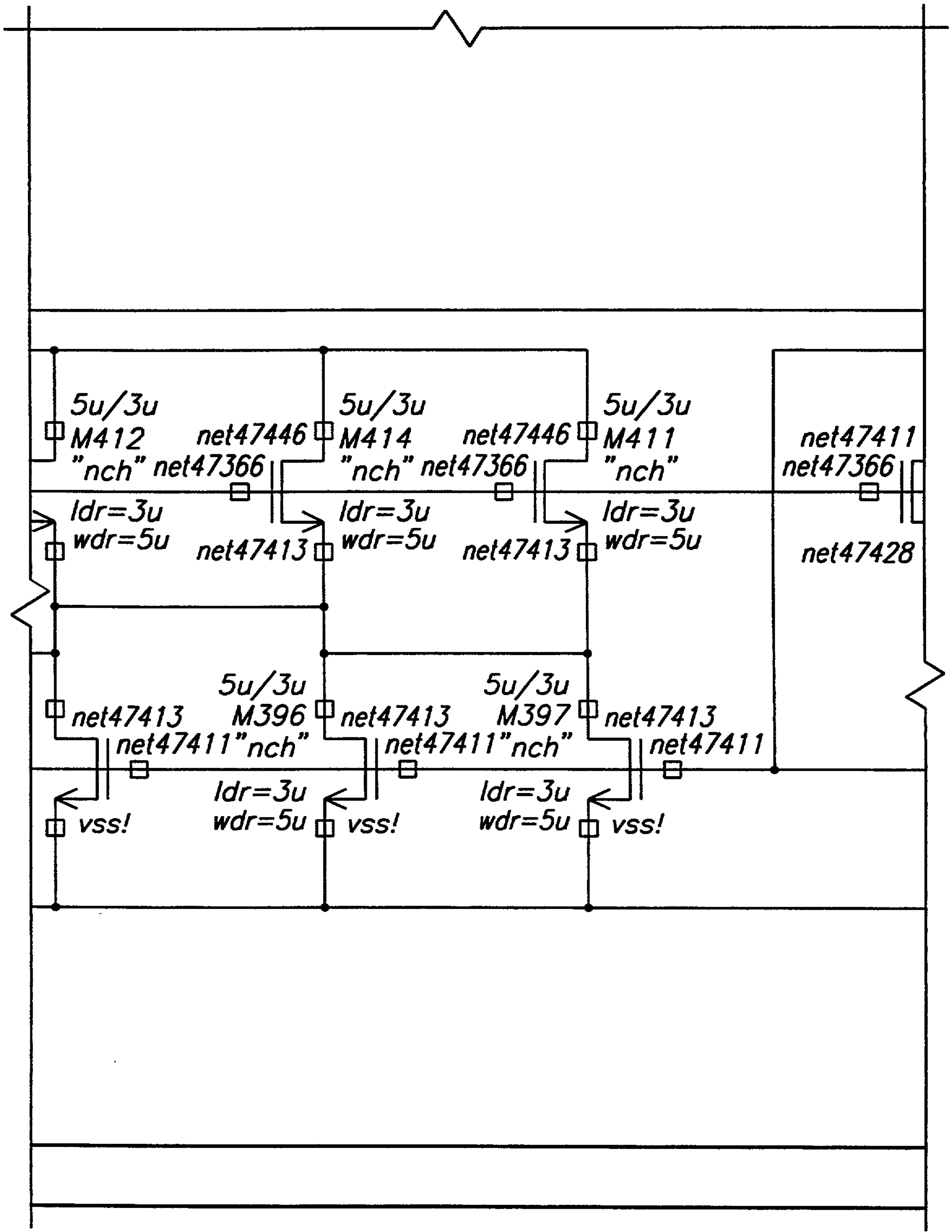

5u/3u
M412
"nch"
net47446
net47366
ldr=3u
wdr=5u
5u/3u
M414
"nch"
net47446
net47366
net47413
ldr=3u
wdr=5u
5u/3u
M411
"nch"
net47413
ldr=3u
wdr=5u
net47411
net47366
net47428
net47413
net47411"nch"
5u/3u
M396
net47413
net47411"nch"
5u/3u
M397
net47413
net47411
vss!
ldr=3u
wdr=5u
vss!
ldr=3u
wdr=5u
vss!

Fig 16.01DE

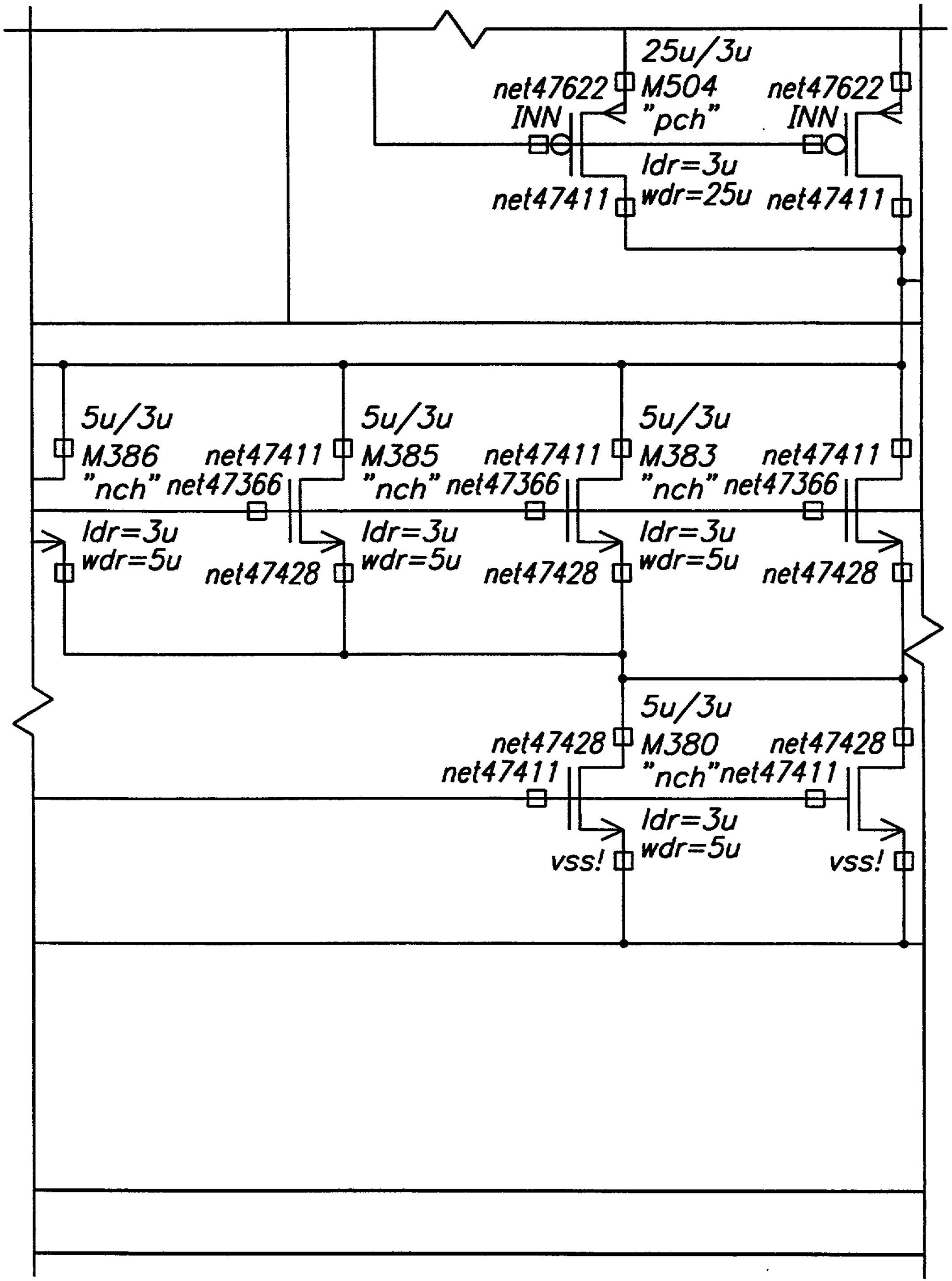

25u/3u
net47622
M504
"pch"
net47622
INN
INN
ldr=3u
net47411
wdr=25u
net47411
5u/3u
M386
"nch"
net47411
net47366
ldr=3u
wdr=5u
net47428
5u/3u
M385
"nch"
net47411
net47366
ldr=3u
wdr=5u
net47428
5u/3u
M383
"nch"
net47411
net47366
ldr=3u
wdr=5u
net47428
5u/3u
net47428
M380
net47428
net47411
"nch"
net47411
ldr=3u
wdr=5u
vss!
vss!

Fig 16.01DF

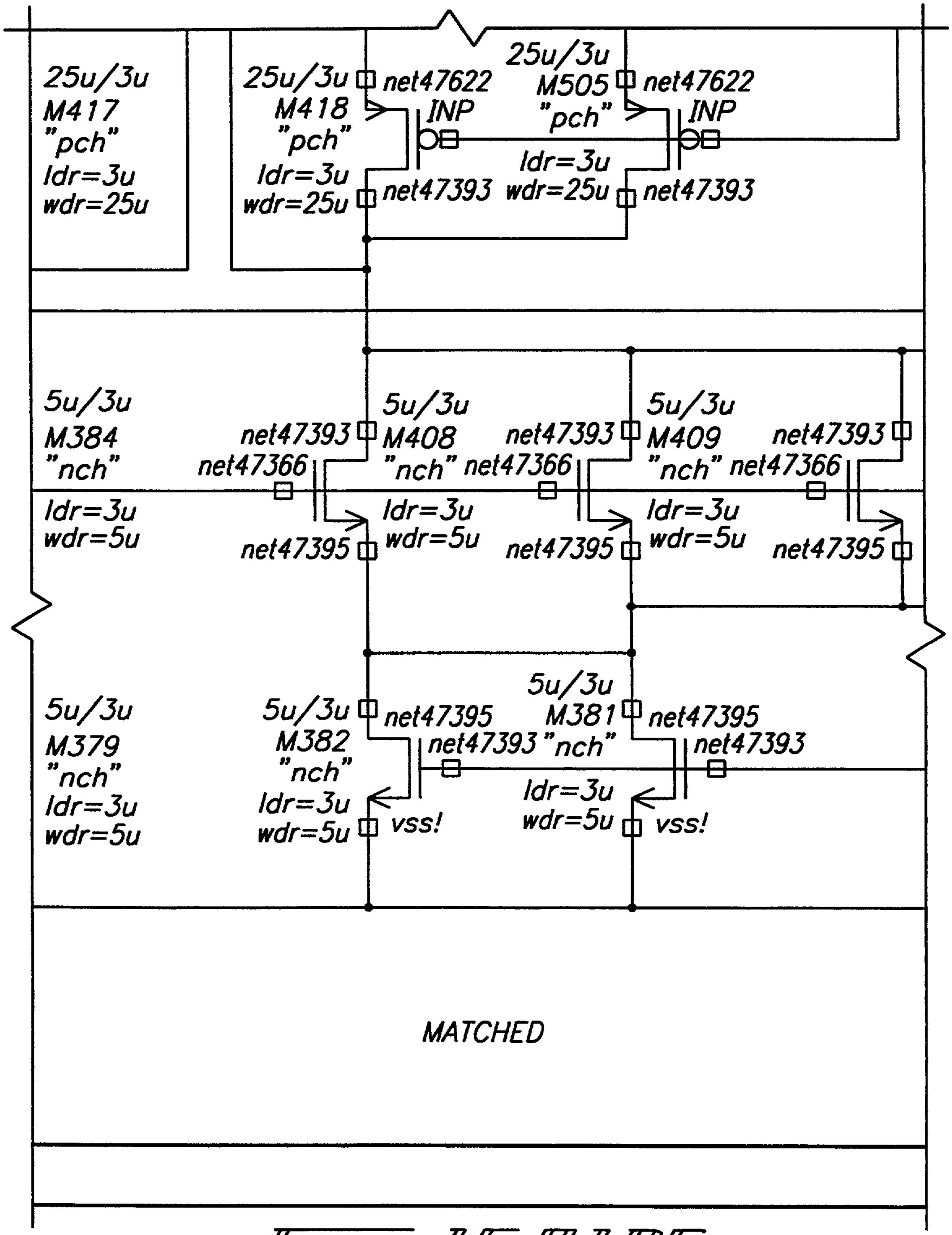

25u/3u
M417
"pch"
ldr=3u
wdr=25u
25u/3u
M418
"pch"
ldr=3u
wdr=25u
net47622
INP
net47393
25u/3u
M505
"pch"
ldr=3u
wdr=25u
net47622
INP
net47393
5u/3u
M384
"nch"
ldr=3u
wdr=5u
net47393
net47366
net47395
5u/3u
M408
"nch"
ldr=3u
wdr=5u
net47393
net47366
net47395
5u/3u
M409
"nch"
ldr=3u
wdr=5u
net47393
net47366
net47395
5u/3u
M379
"nch"
ldr=3u
wdr=5u
5u/3u
M382
"nch"
ldr=3u
wdr=5u
net47395
net47393
vss!
5u/3u
M381
"nch"
ldr=3u
wdr=5u
net47395
net47393
vss!
MATCHED

Fig 16.01DG

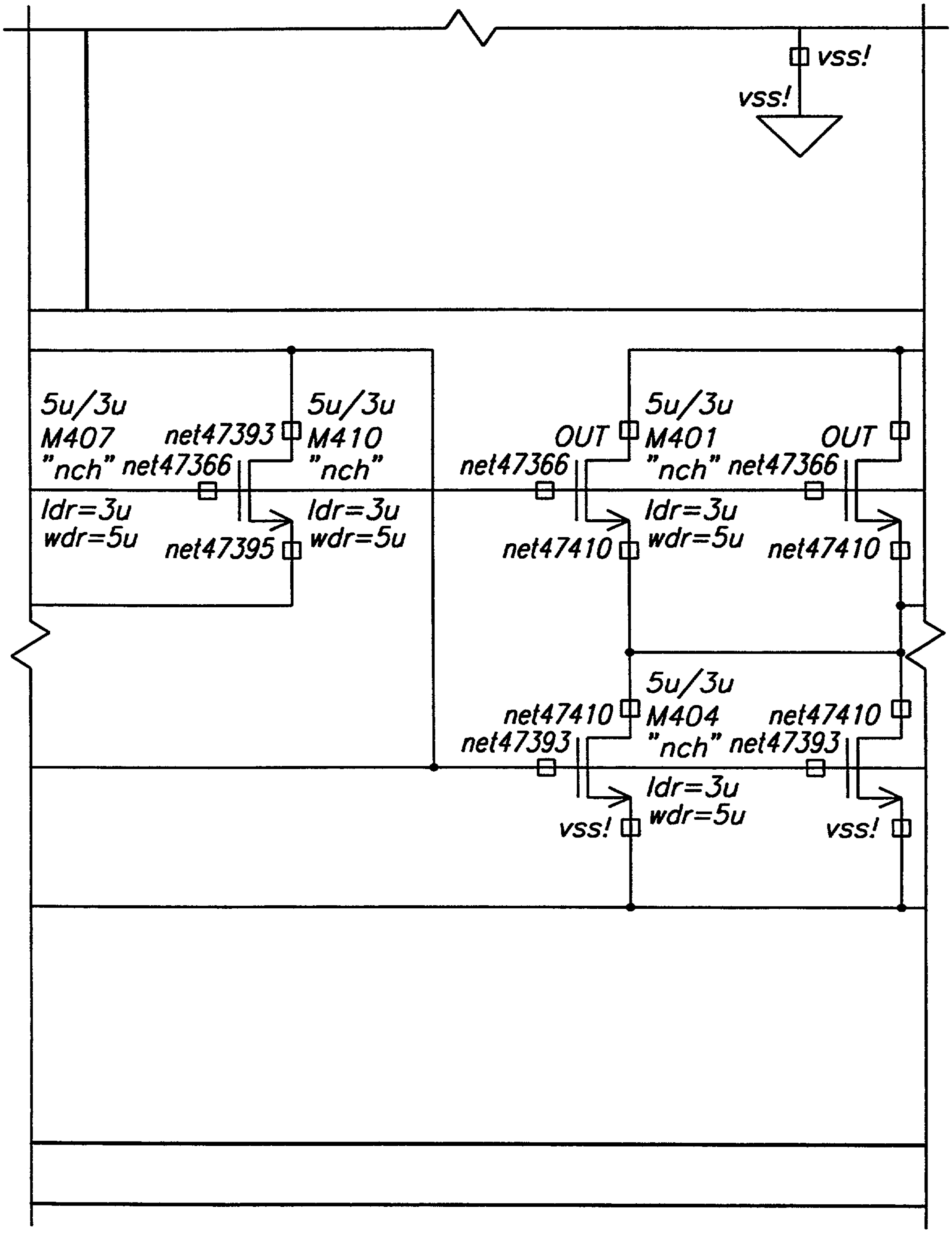

vss!
vss!
5u/3u
M407
"nch"
ldr=3u
wdr=5u
net47393
net47366
net47395
5u/3u
M410
"nch"
ldr=3u
wdr=5u
OUT
net47366
net47410
5u/3u
M401
"nch"
ldr=3u
wdr=5u
OUT
net47366
net47410
net47410
net47393
vss!
5u/3u
M404
"nch"
ldr=3u
wdr=5u
net47410
net47393
vss!

Fig 16.01DH

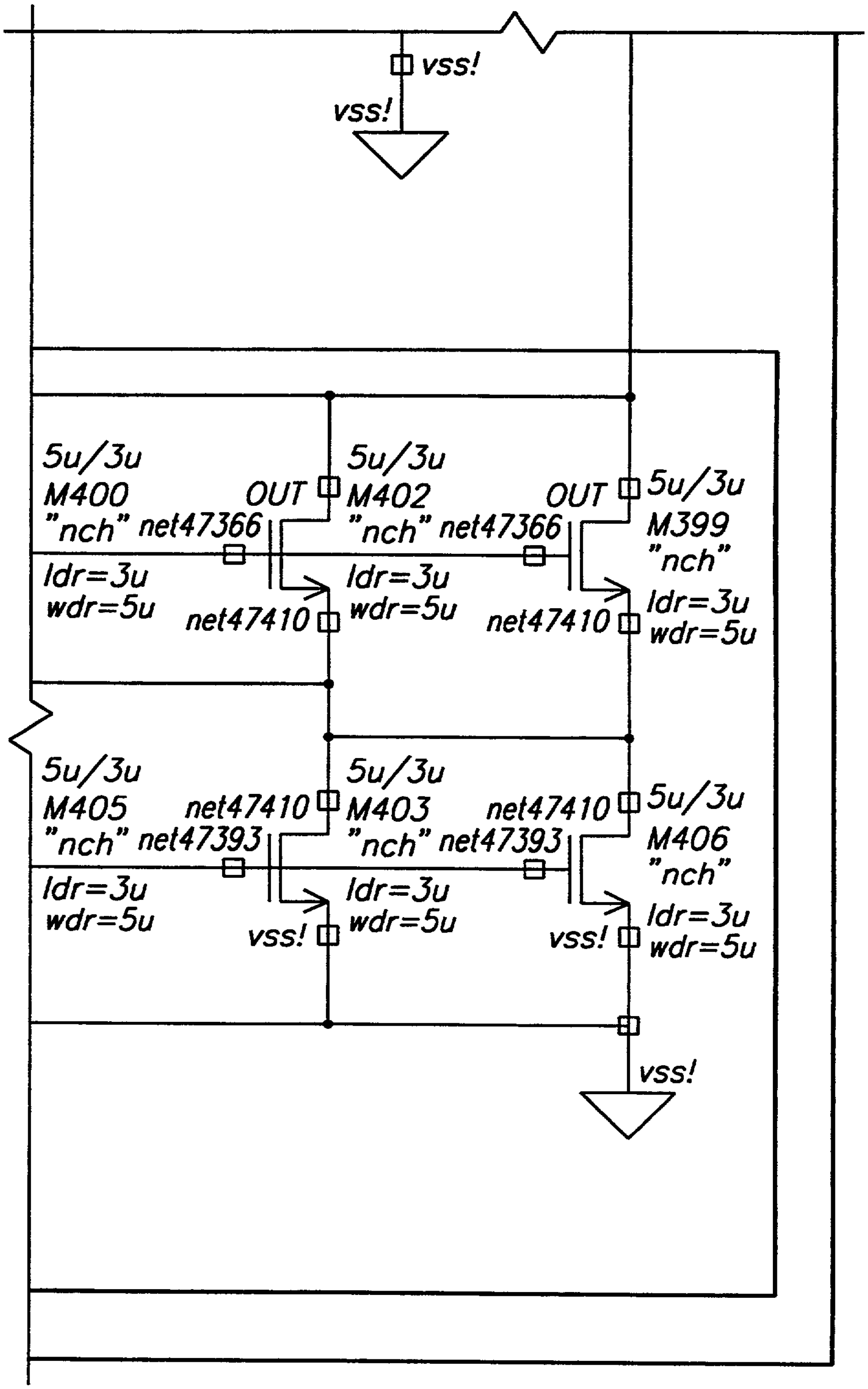

vss!
vss!
5u/3u
M400
"nch"
net47366
ldr=3u
wdr=5u
OUT
net47410
5u/3u
M402
"nch"
net47366
ldr=3u
wdr=5u
OUT
net47410
5u/3u
M399
"nch"
ldr=3u
wdr=5u
5u/3u
M405
"nch"
net47393
ldr=3u
wdr=5u
net47410
vss!
5u/3u
M403
"nch"
net47393
ldr=3u
wdr=5u
net47410
vss!
5u/3u
M406
"nch"
ldr=3u
wdr=5u
vss!

Fig 16.01D1

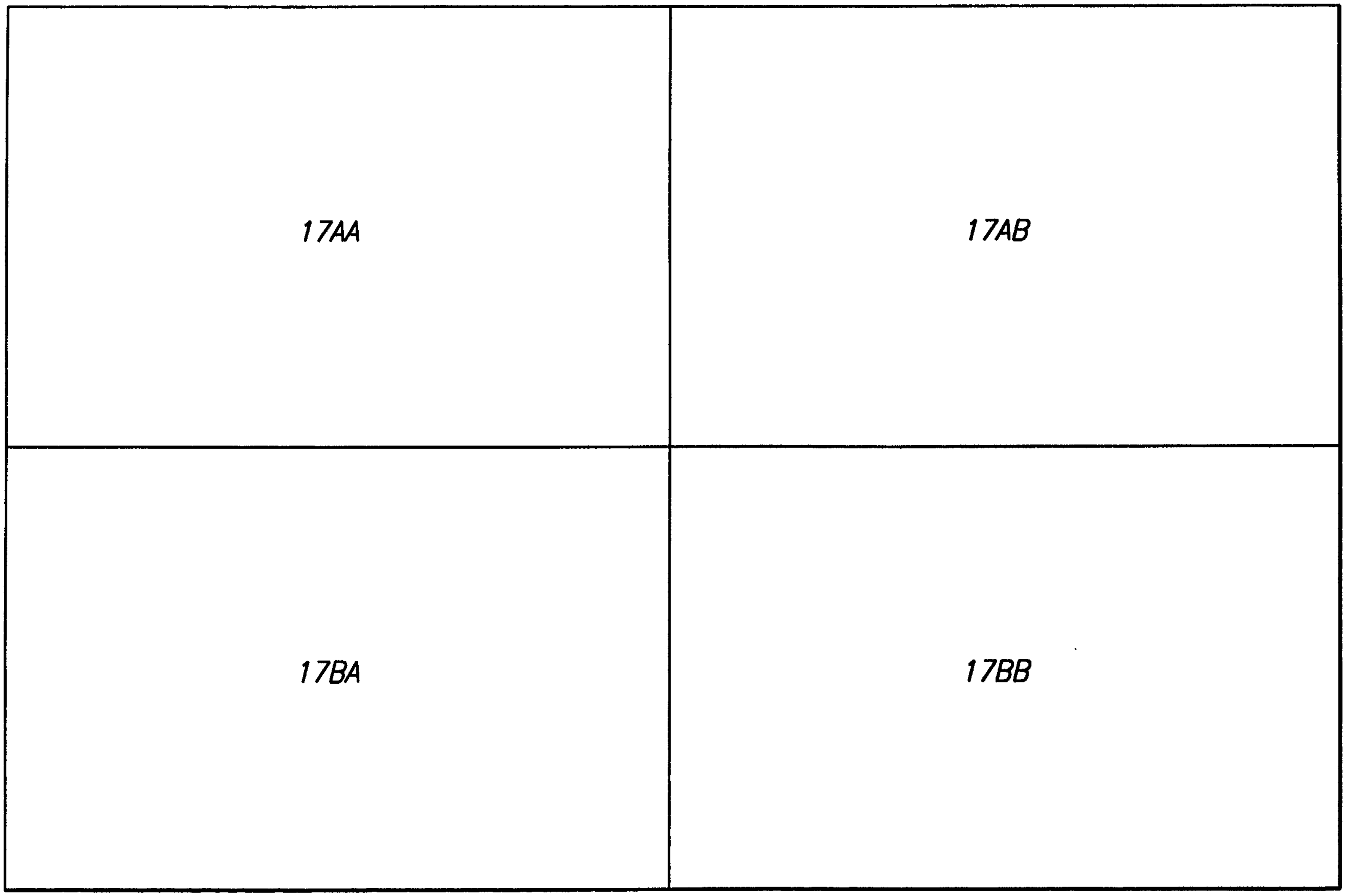


FIG. 17

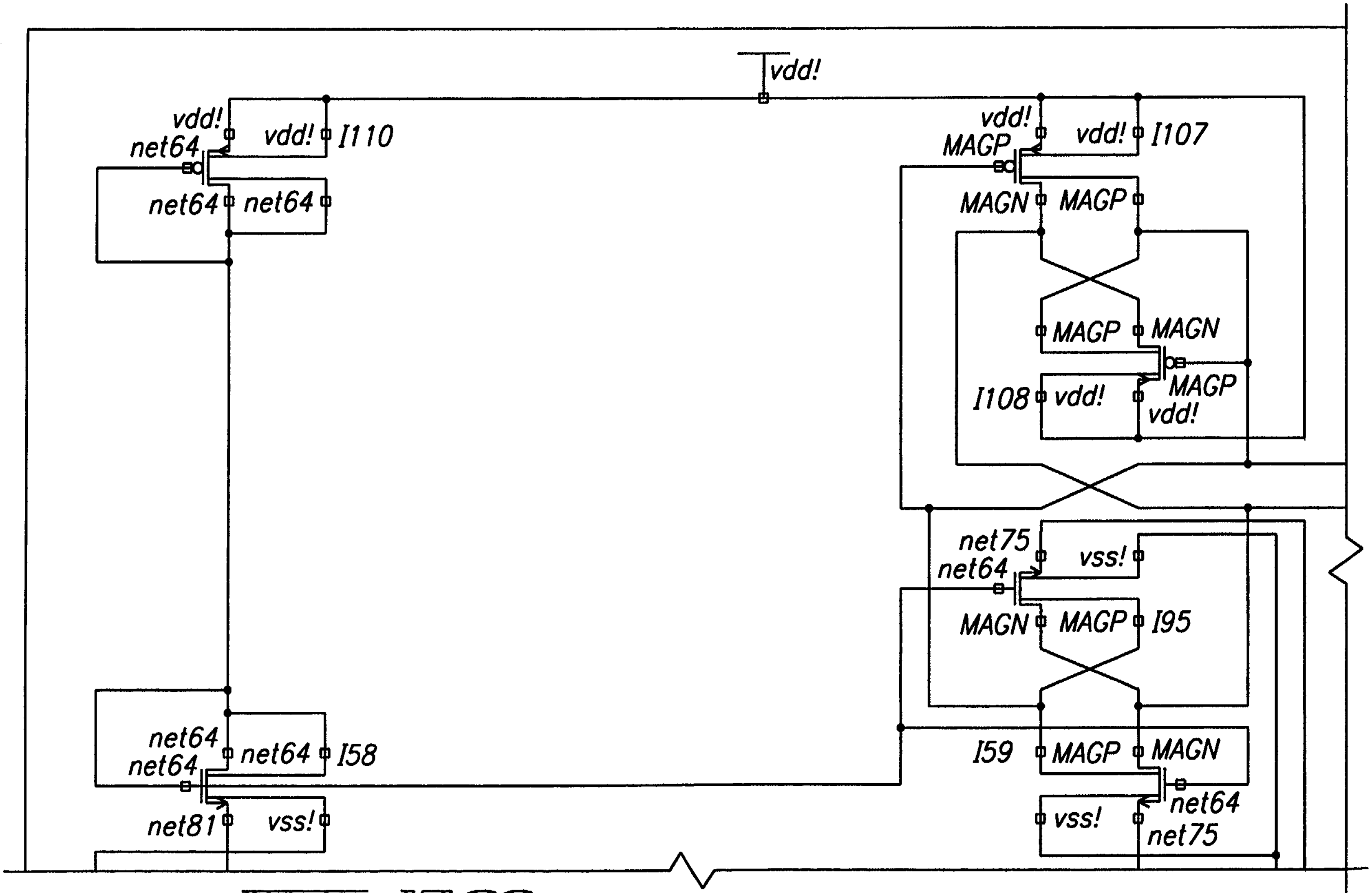

vdd!
vdd!
net64
vdd!
I110
net64
net64
net64
net64
net64
I58
net81
vss!
vdd!
MAGP
vdd!
I107
MAGN
MAGP
MAGP
MAGN
I108
vdd!
MAGP
vdd!
net75
net64
vss!
MAGN
MAGP
I95
I59
MAGP
MAGN
net64
vss!
net75

FIG 11AA

3085/3273

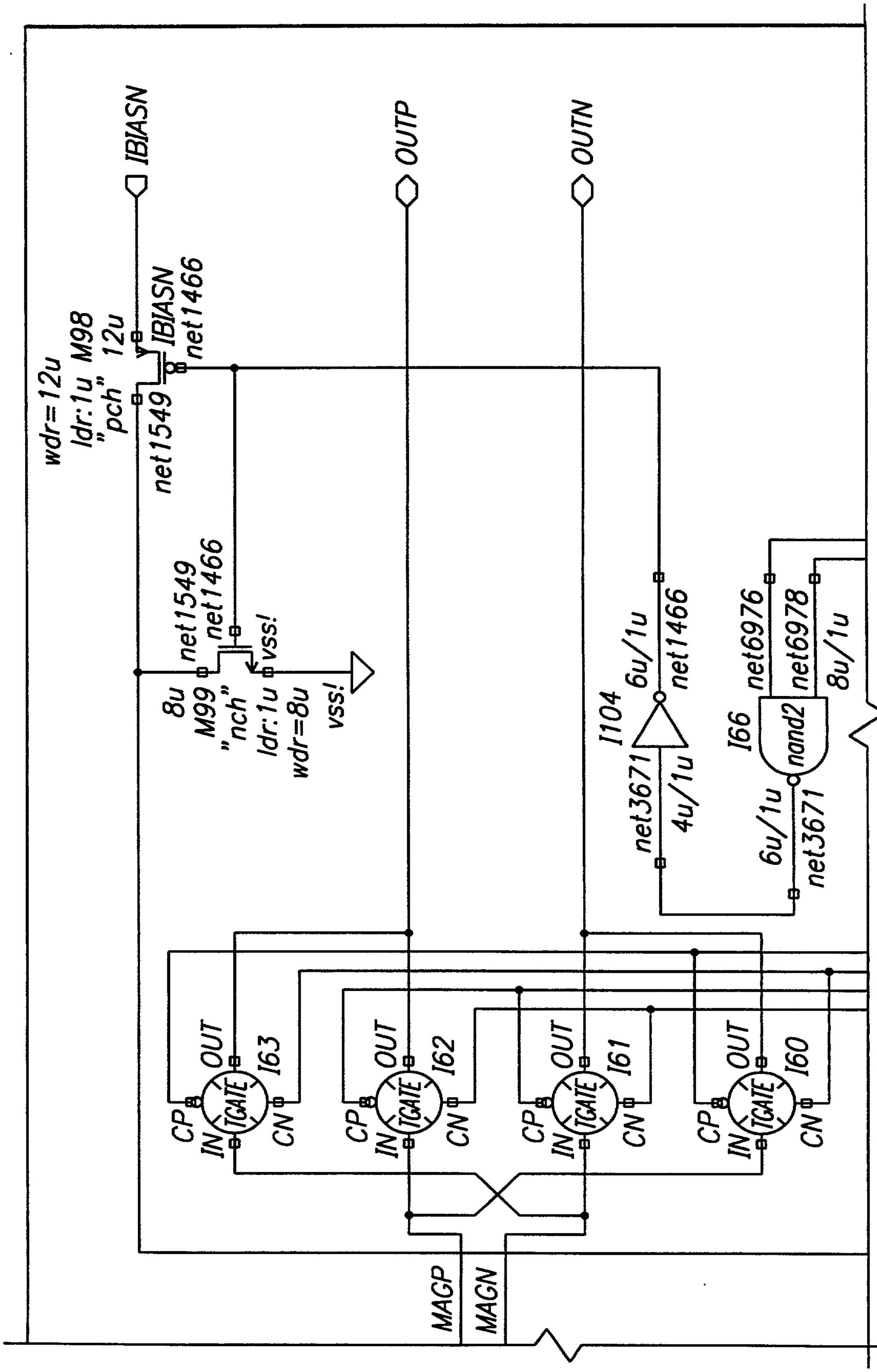


FIG. 11AB

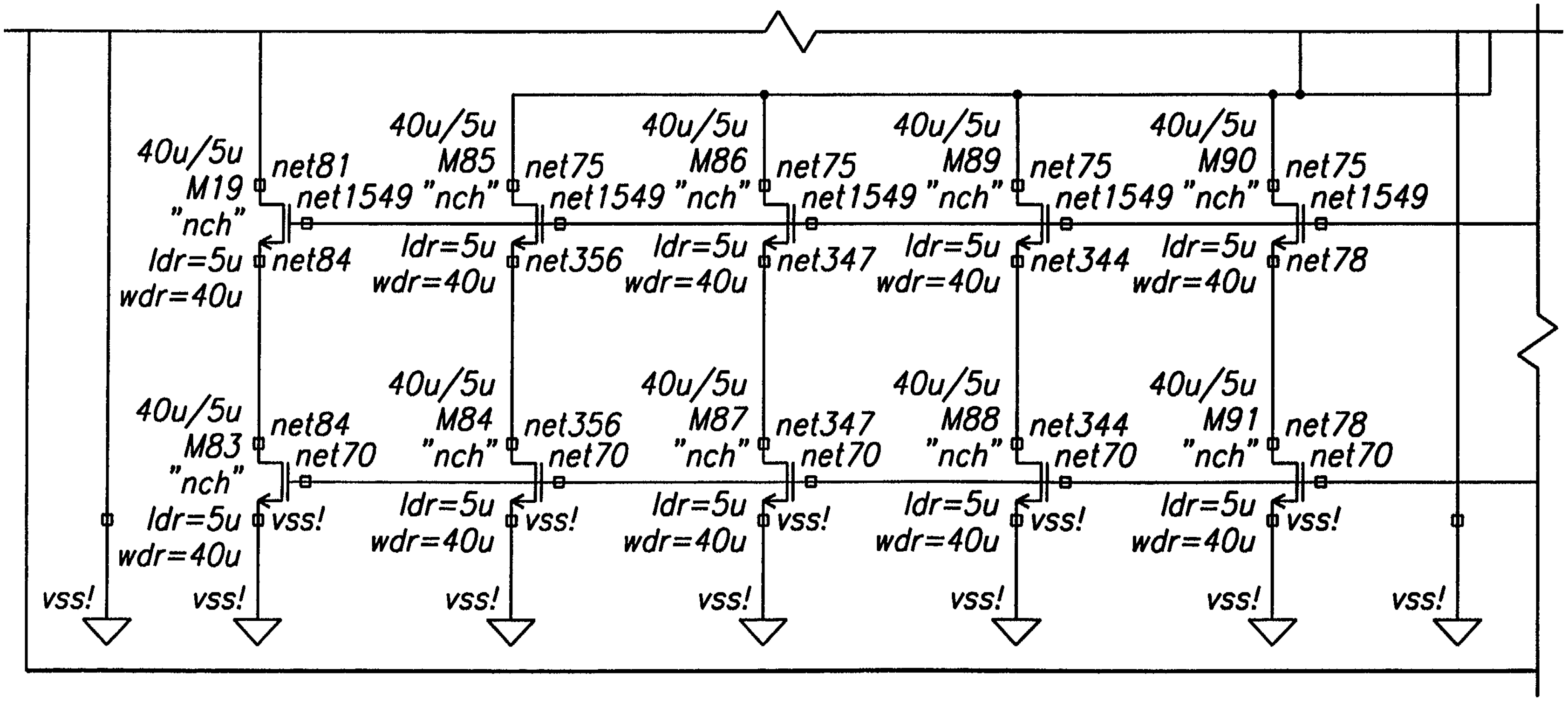

40u/5u
M19
"nch"
ldr=5u
wdr=40u
net81
net1549
net84
40u/5u
M85
"nch"
ldr=5u
wdr=40u
net75
net1549
net356
40u/5u
M86
"nch"
ldr=5u
wdr=40u
net75
net1549
net347
40u/5u
M89
"nch"
ldr=5u
wdr=40u
net75
net1549
net344
40u/5u
M90
"nch"
ldr=5u
wdr=40u
net75
net1549
net78
40u/5u
M83
"nch"
ldr=5u
wdr=40u
net84
net70
vss!
40u/5u
M84
"nch"
ldr=5u
wdr=40u
net356
net70
vss!
40u/5u
M87
"nch"
ldr=5u
wdr=40u
net347
net70
vss!
40u/5u
M88
"nch"
ldr=5u
wdr=40u
net344
net70
vss!
40u/5u
M91
"nch"
ldr=5u
wdr=40u
net78
net70
vss!
vss!
vss!
vss!
vss!
vss!
vss!
vss!

Fig 11BA

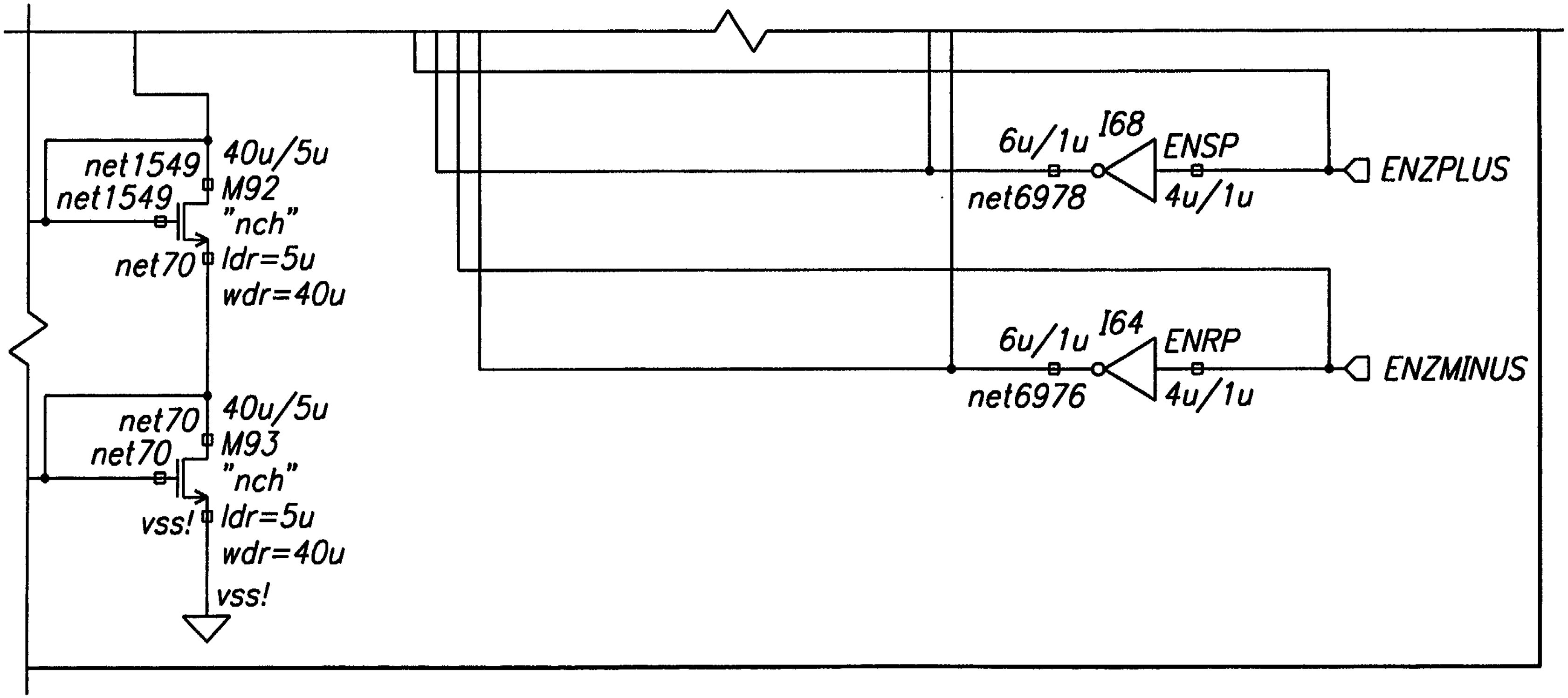

net1549
net1549
40u/5u
M92
"nch"
net70
ldr=5u
wdr=40u
net70
net70
40u/5u
M93
"nch"
vss!
ldr=5u
wdr=40u
vss!
6u/1u
I68
ENSP
net6978
4u/1u
ENZPLUS
6u/1u
I64
ENRP
net6976
4u/1u
ENZMINUS

Fig 11BB

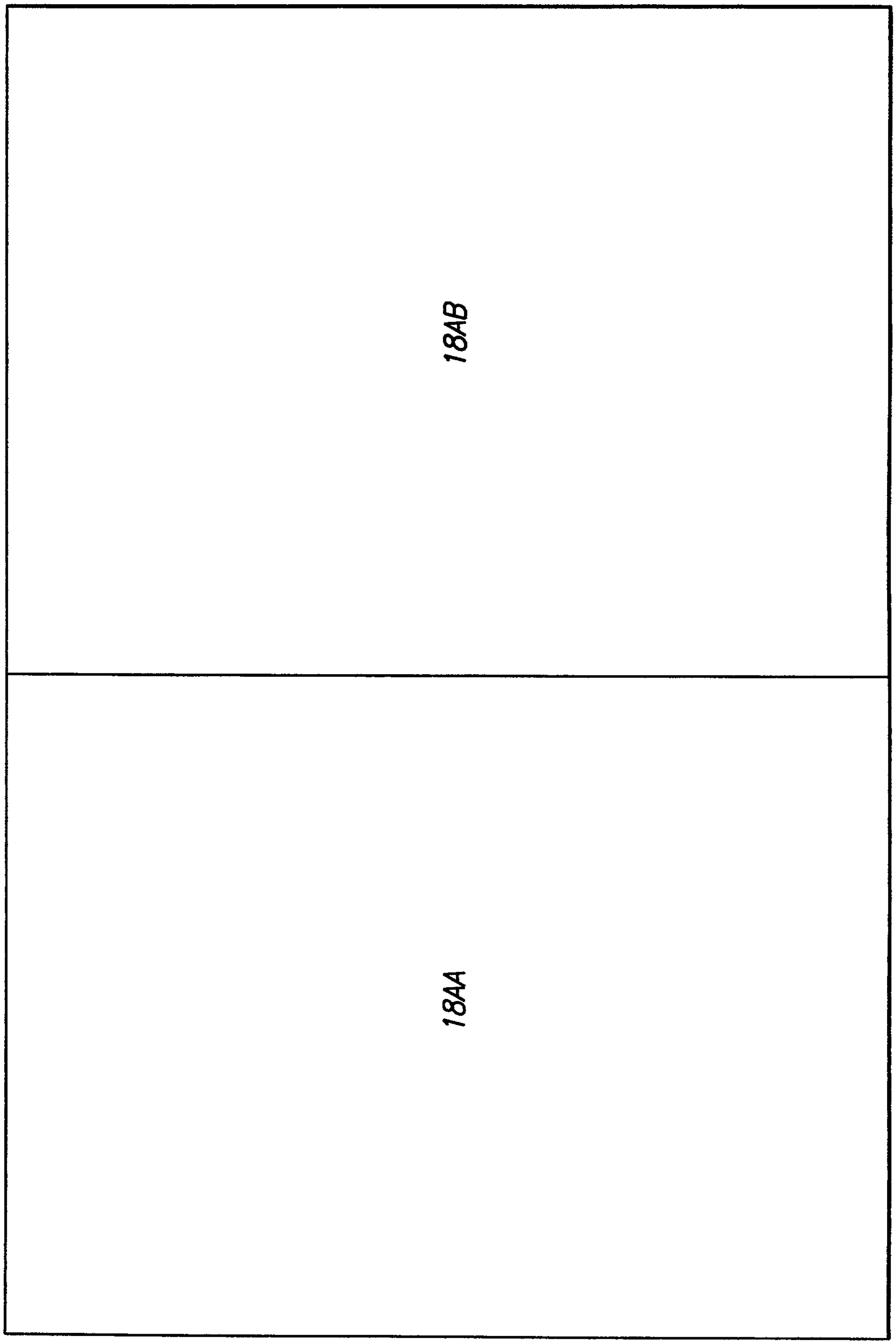


FIG 18

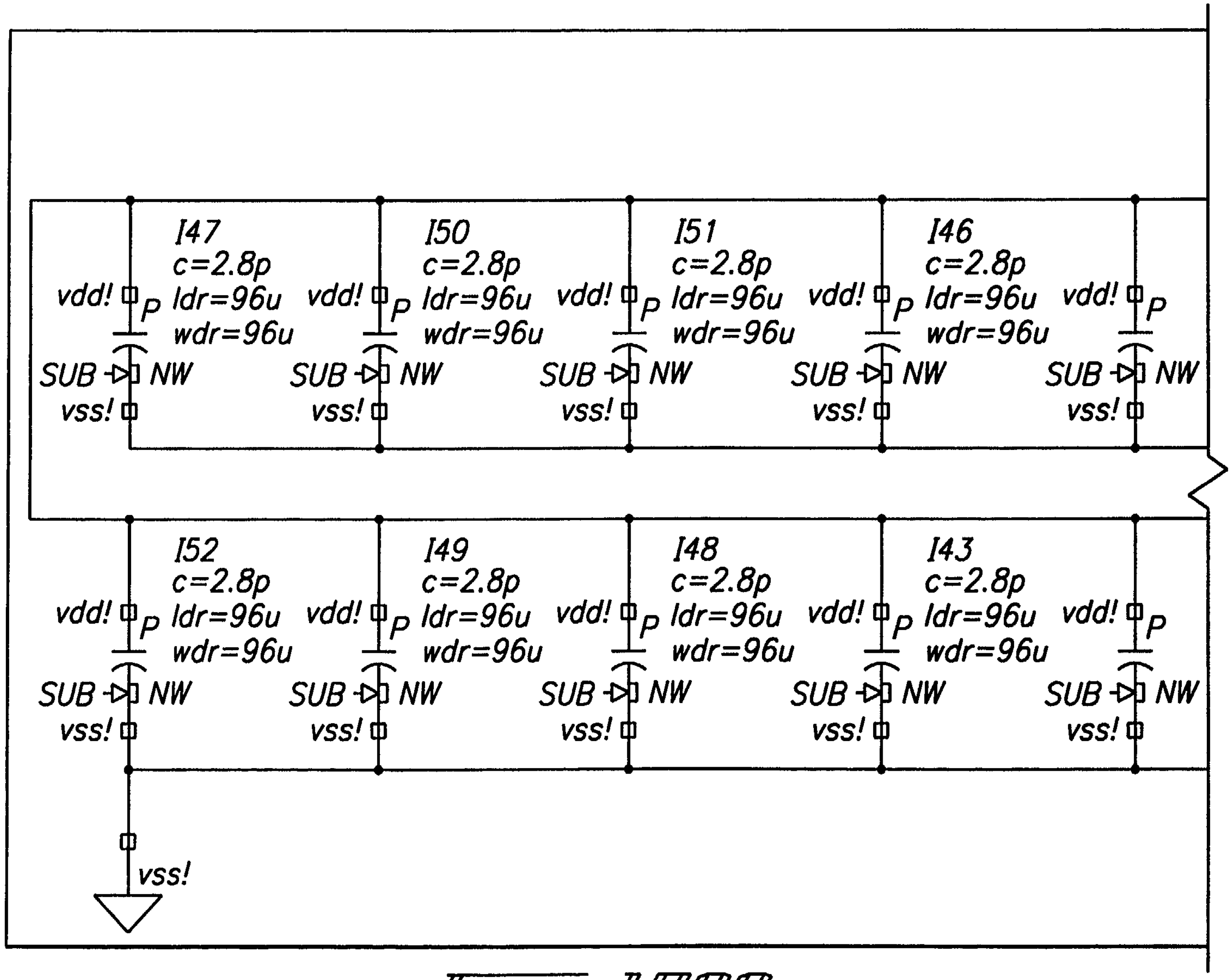

I47
c=2.8p
ldr=96u
wdr=96u
I50
c=2.8p
ldr=96u
wdr=96u
I51
c=2.8p
ldr=96u
wdr=96u
I46
c=2.8p
ldr=96u
wdr=96u
I52
c=2.8p
ldr=96u
wdr=96u
I49
c=2.8p
ldr=96u
wdr=96u
I48
c=2.8p
ldr=96u
wdr=96u
I43
c=2.8p
ldr=96u
wdr=96u
vdd!
P
SUB
NW
vss!
vss!

Fig 18AA

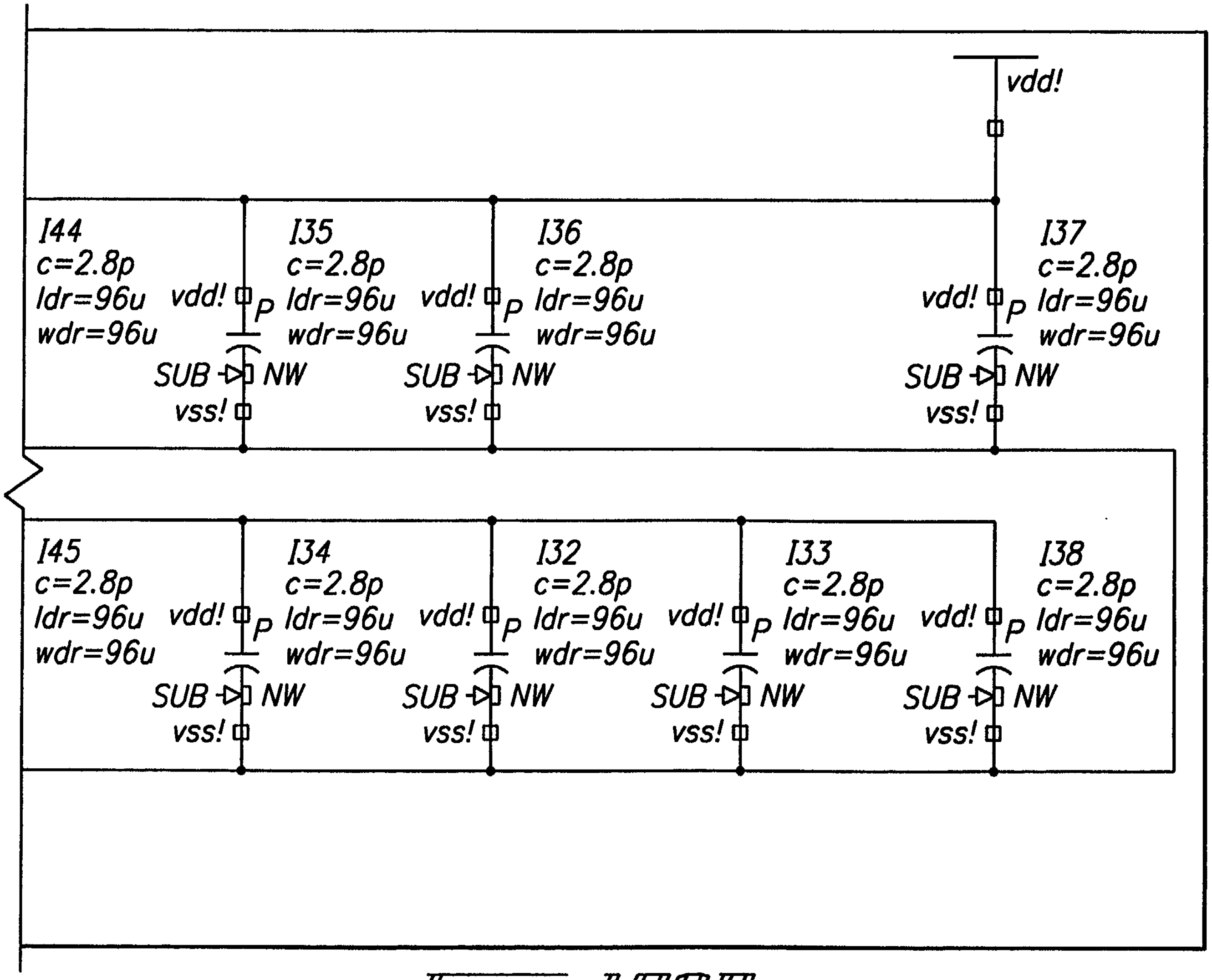

vdd!
I44
c=2.8p
ldr=96u
wdr=96u
vdd!
P
SUB
NW
vss!
I35
c=2.8p
ldr=96u
wdr=96u
vdd!
P
SUB
NW
vss!
I36
c=2.8p
ldr=96u
wdr=96u
vdd!
P
SUB
NW
vss!
I37
c=2.8p
ldr=96u
wdr=96u
I45
c=2.8p
ldr=96u
wdr=96u
vdd!
P
SUB
NW
vss!
I34
c=2.8p
ldr=96u
wdr=96u
vdd!
P
SUB
NW
vss!
I32
c=2.8p
ldr=96u
wdr=96u
vdd!
P
SUB
NW
vss!
I33
c=2.8p
ldr=96u
wdr=96u
vdd!
P
SUB
NW
vss!
I38
c=2.8p
ldr=96u
wdr=96u

Fig 18AB

19AA	19AB	19AC	19AD	19AE	19AF	19AG	19AH	19AI	19AJ	19AK
19BA	19BB	19BC	19BD	19BE	19BF	19BG	19BH	19BI	19BJ	19BK
19CA	19CB	19CC	19CD	19CE	19CF	19CG	19CH	19CI	19CJ	19CK
19DA	19DB	19DC	19DD	19DE	19DF	19DG	19DH	19DI	19DJ	19DK
19EA	19EB	19EC	19ED	19EE	19EF	19EG	19EH	19EI	19EJ	19EK

Fig 19

3092/3273

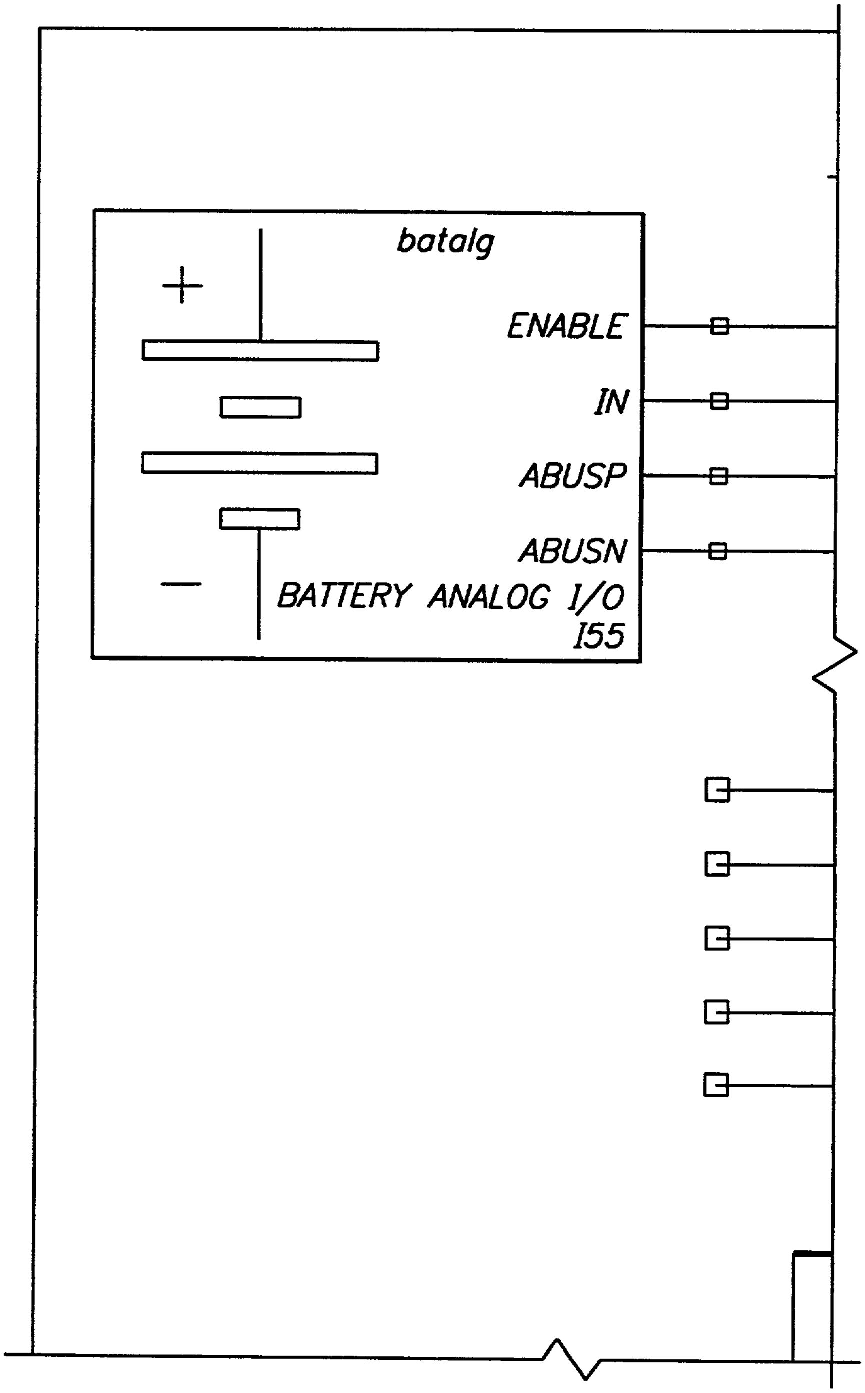


Fig 19AA

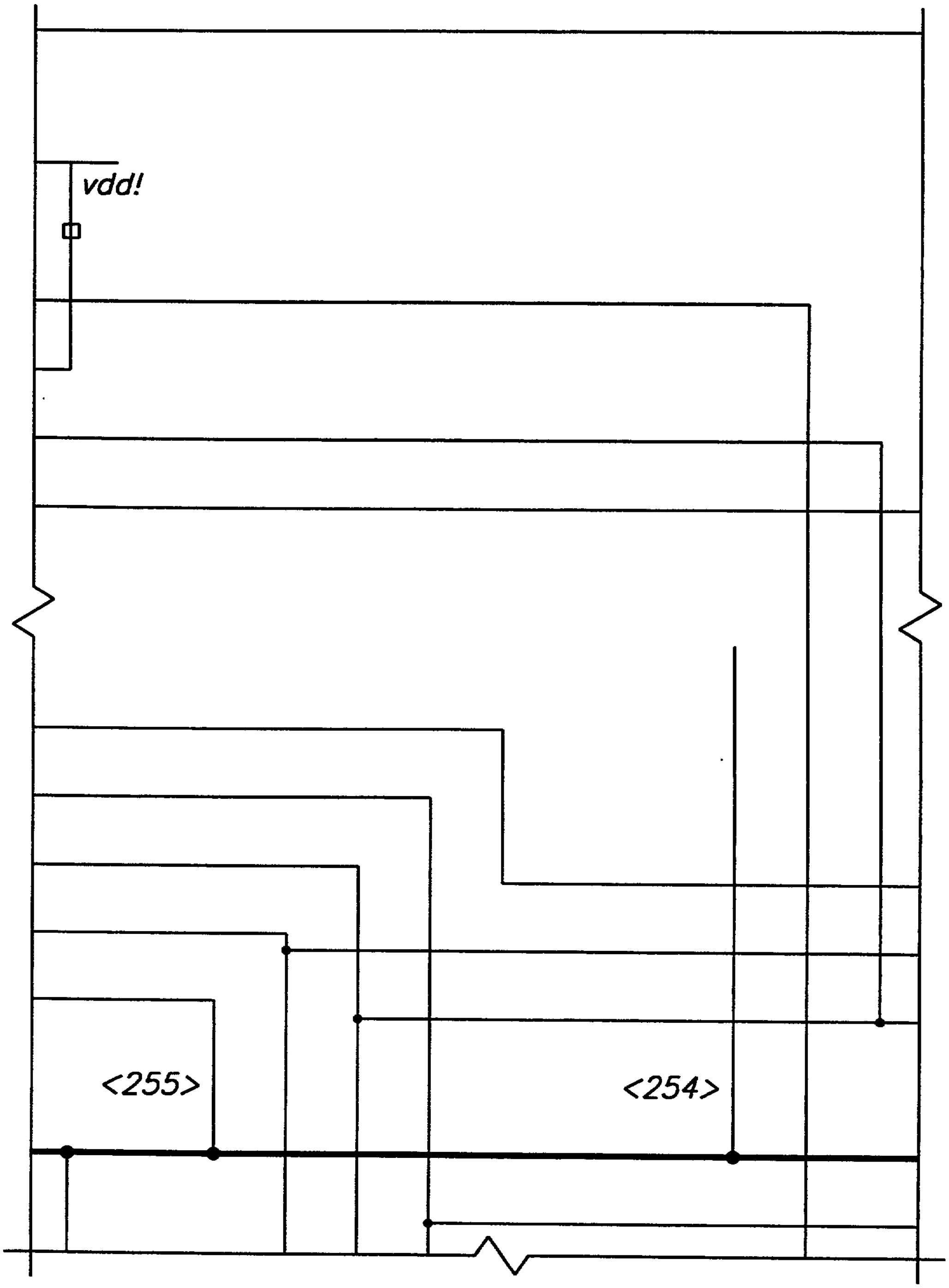


Fig 19AB

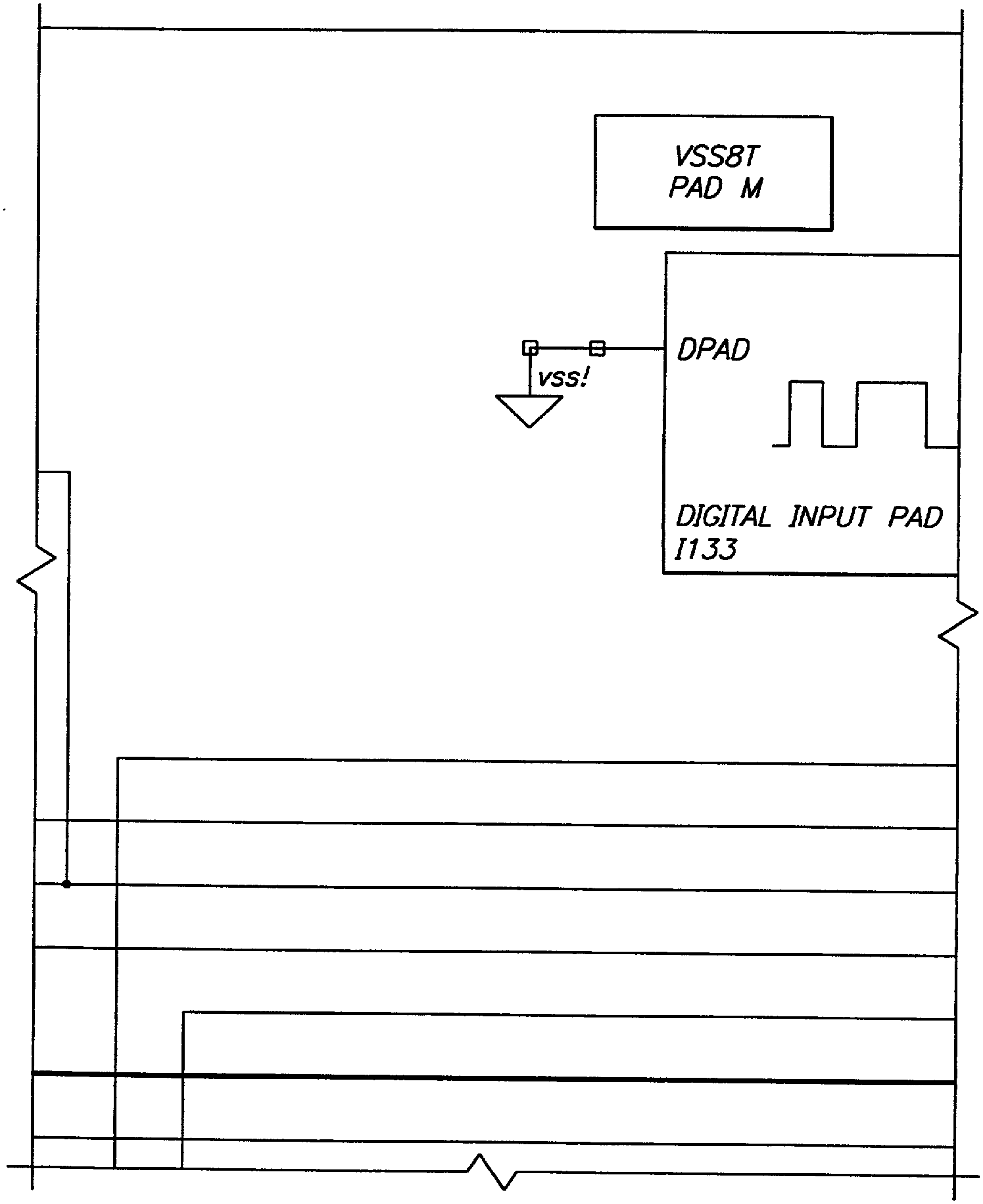


Fig 19AC

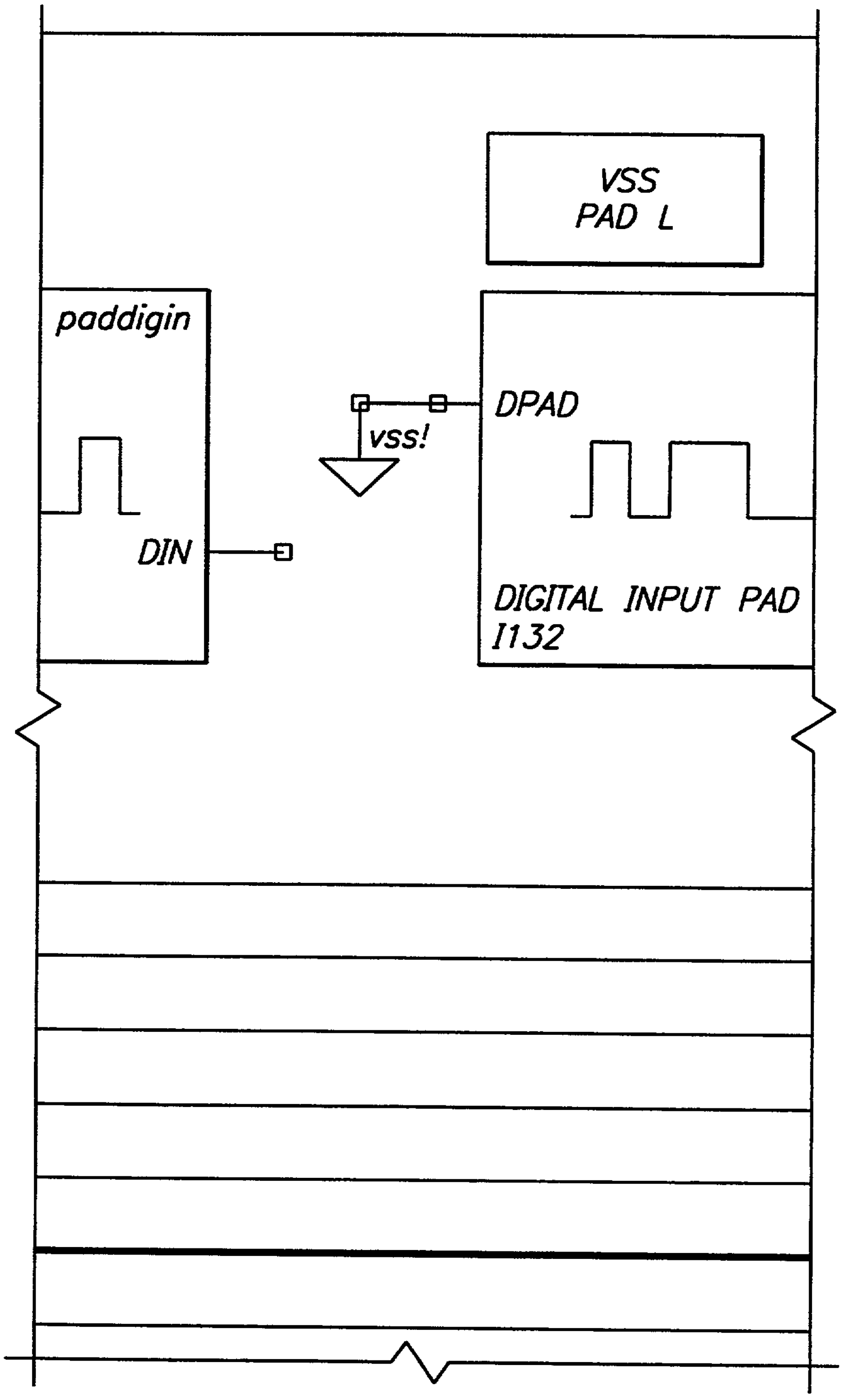


Fig 19AD

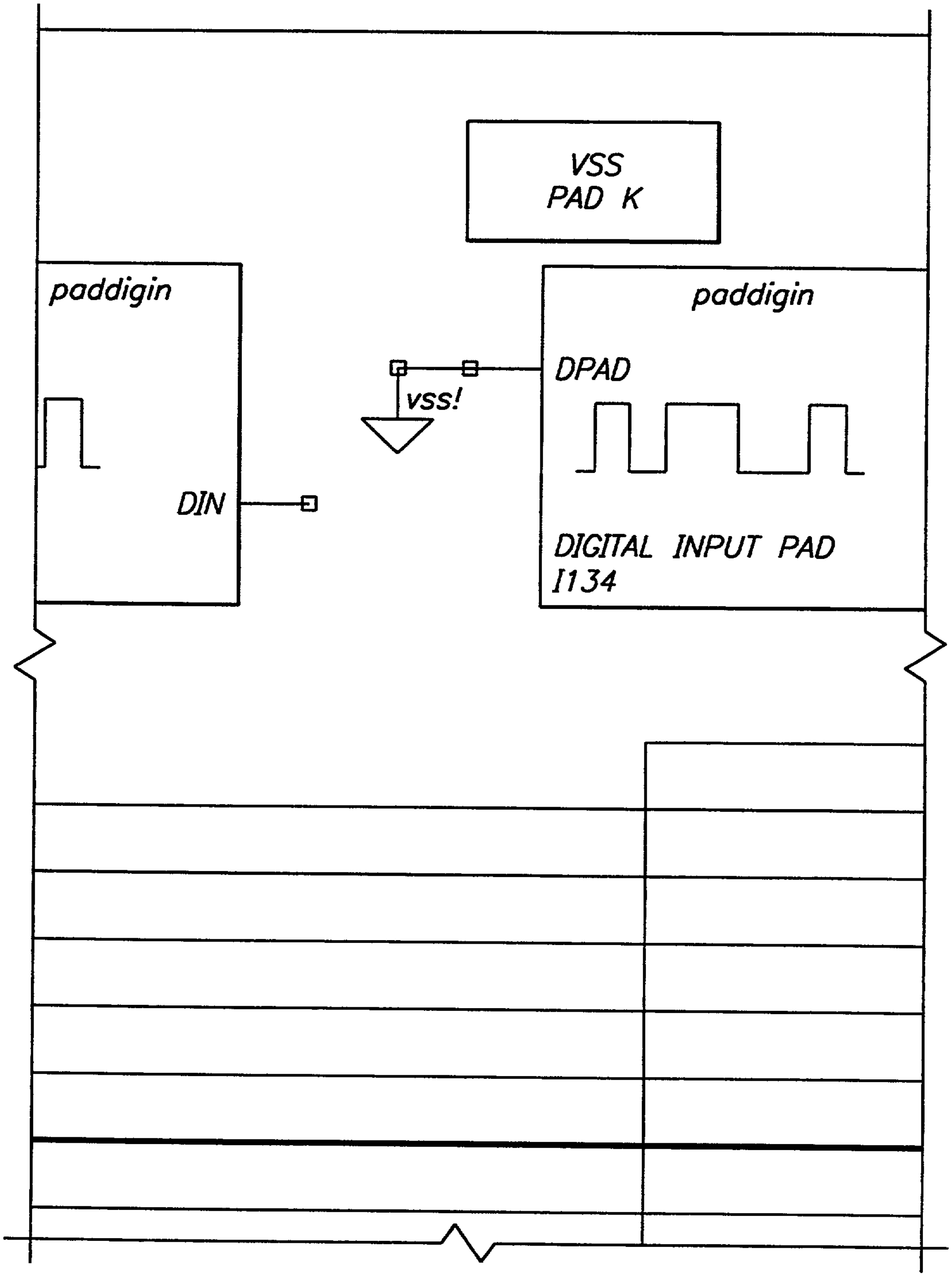

VSS
PAD K
paddigin
DIN
vss!
paddigin
DPAD
DIGITAL INPUT PAD
I134

Fig 19AE

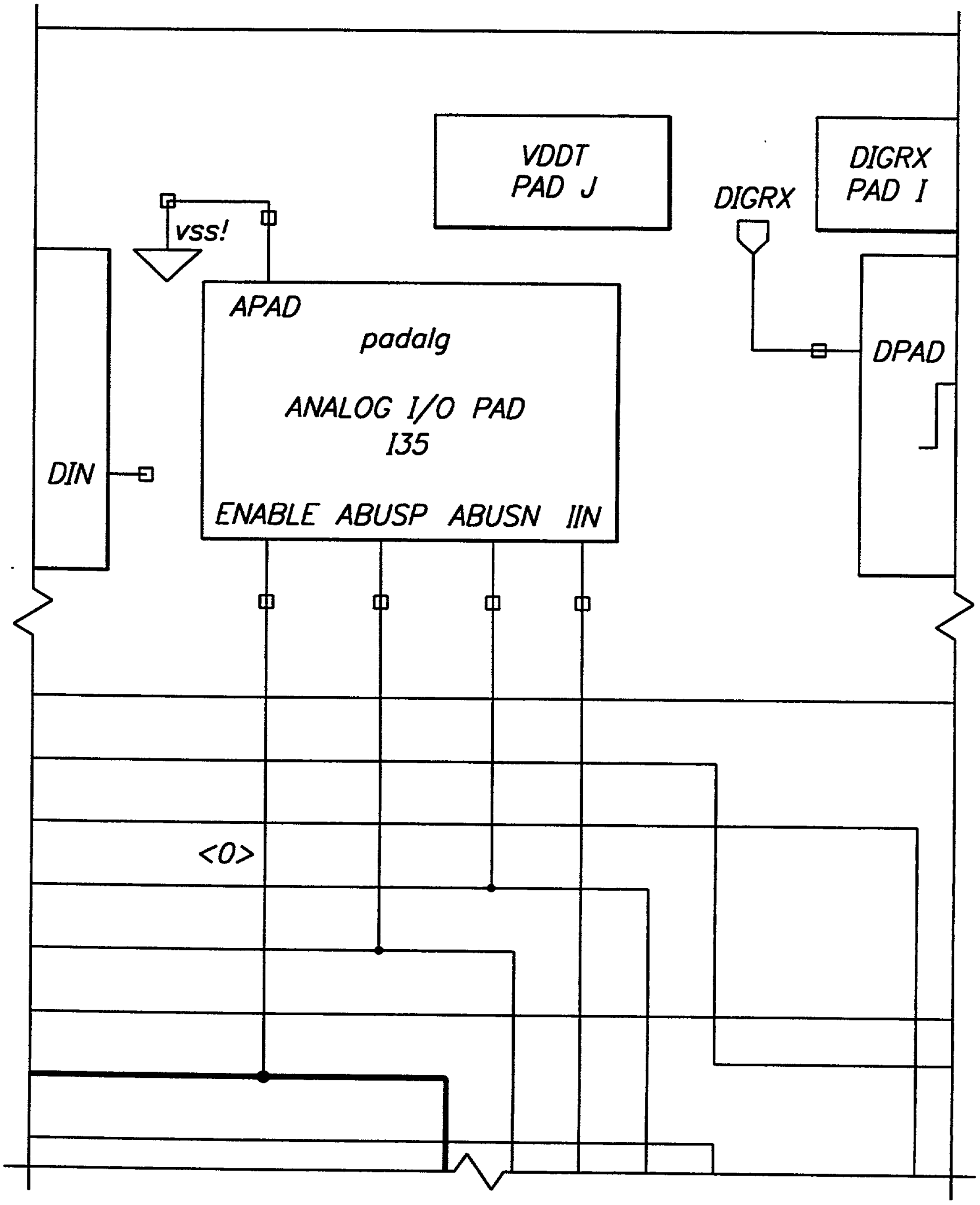

VDDT
PAD J
DIGRX
PAD I
DIGRX
vss!
APAD
padalg
ANALOG I/O PAD
I35
ENABLE
ABUSP
ABUSN
IIN
DIN
DPAD
<0>

Fig 19AF

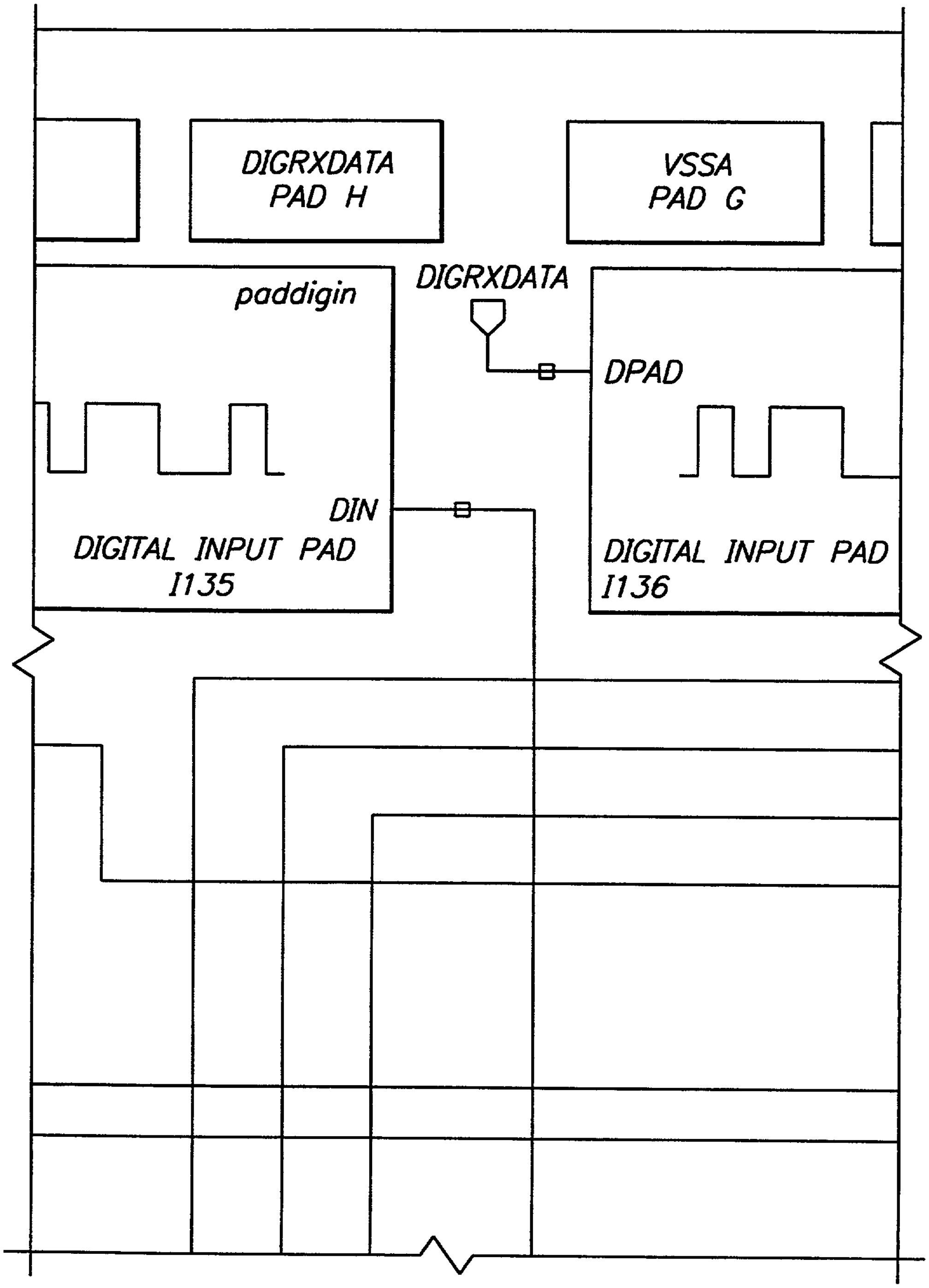

DIGRXDATA
PAD H
VSSA
PAD G
paddigin
DIGRXDATA
DPAD
DIN
DIGITAL INPUT PAD
I135
DIGITAL INPUT PAD
I136

Fig 19AG

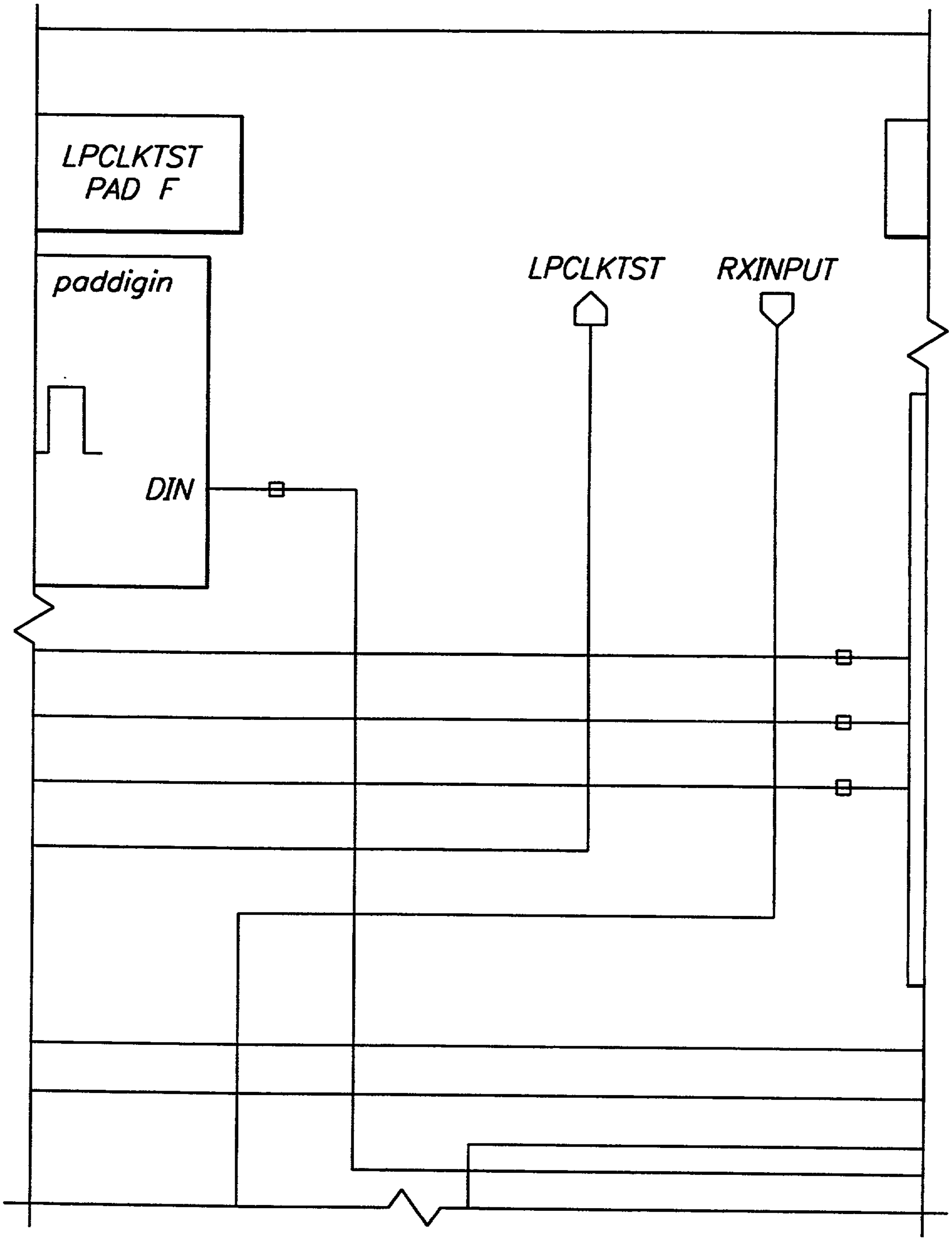


Fig 19AH

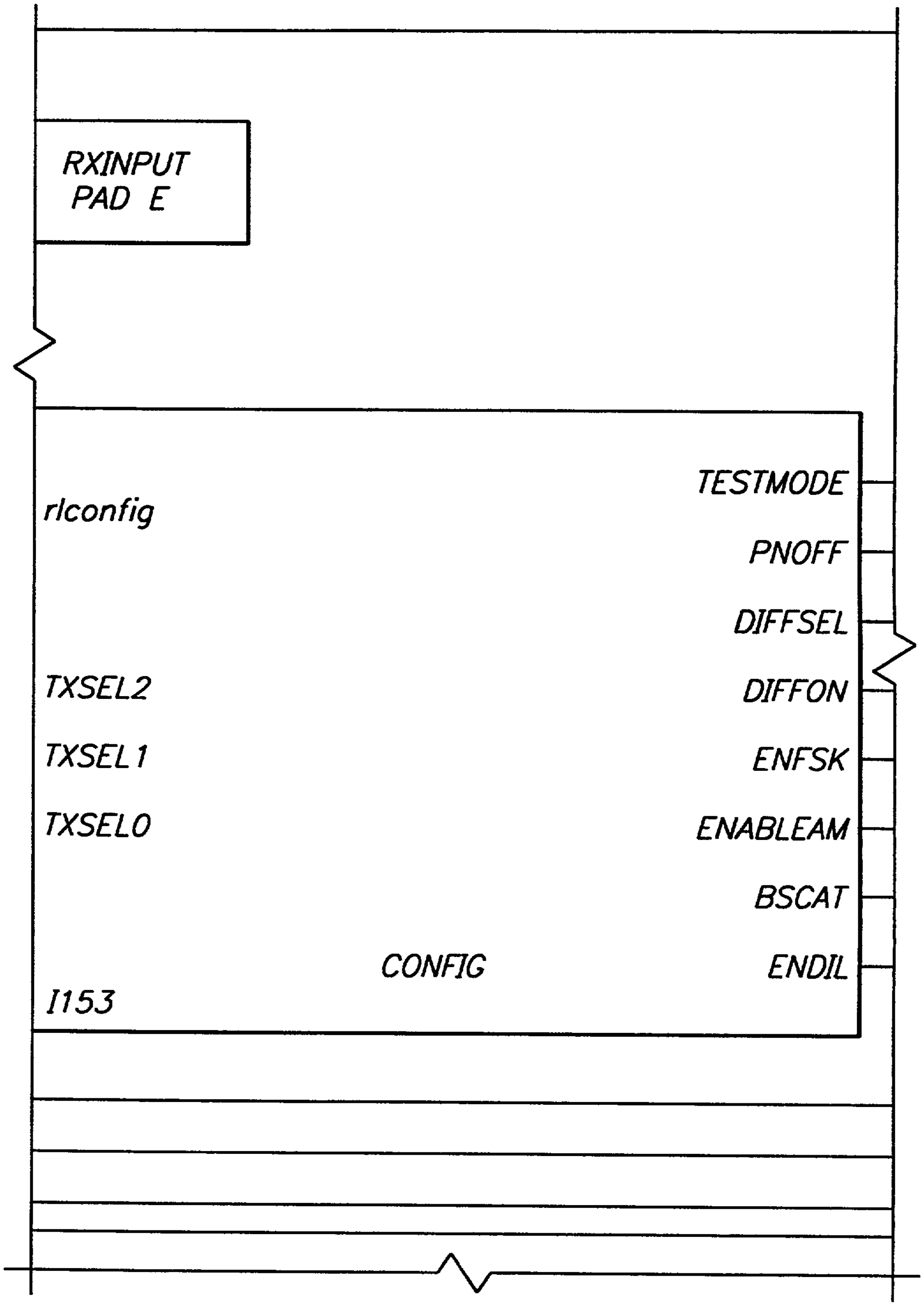

RXINPUT
PAD E
rlconfig
TXSEL2
TXSEL1
TXSEL0
CONFIG
I153
TESTMODE
PNOFF
DIFFSEL
DIFFON
ENFSK
ENABLEAM
BSCAT
ENDIL

Fig 19A1

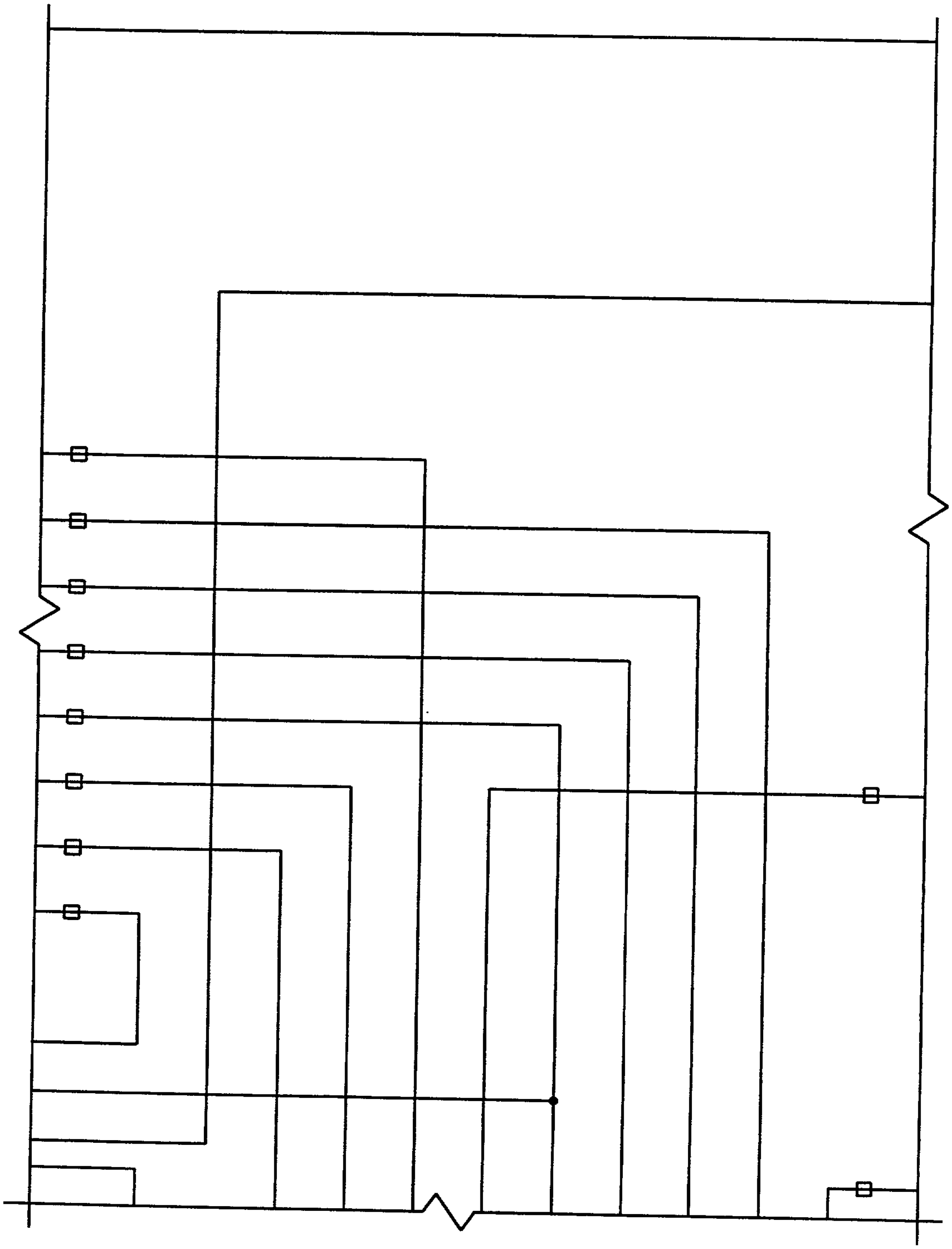


Fig 19Ad

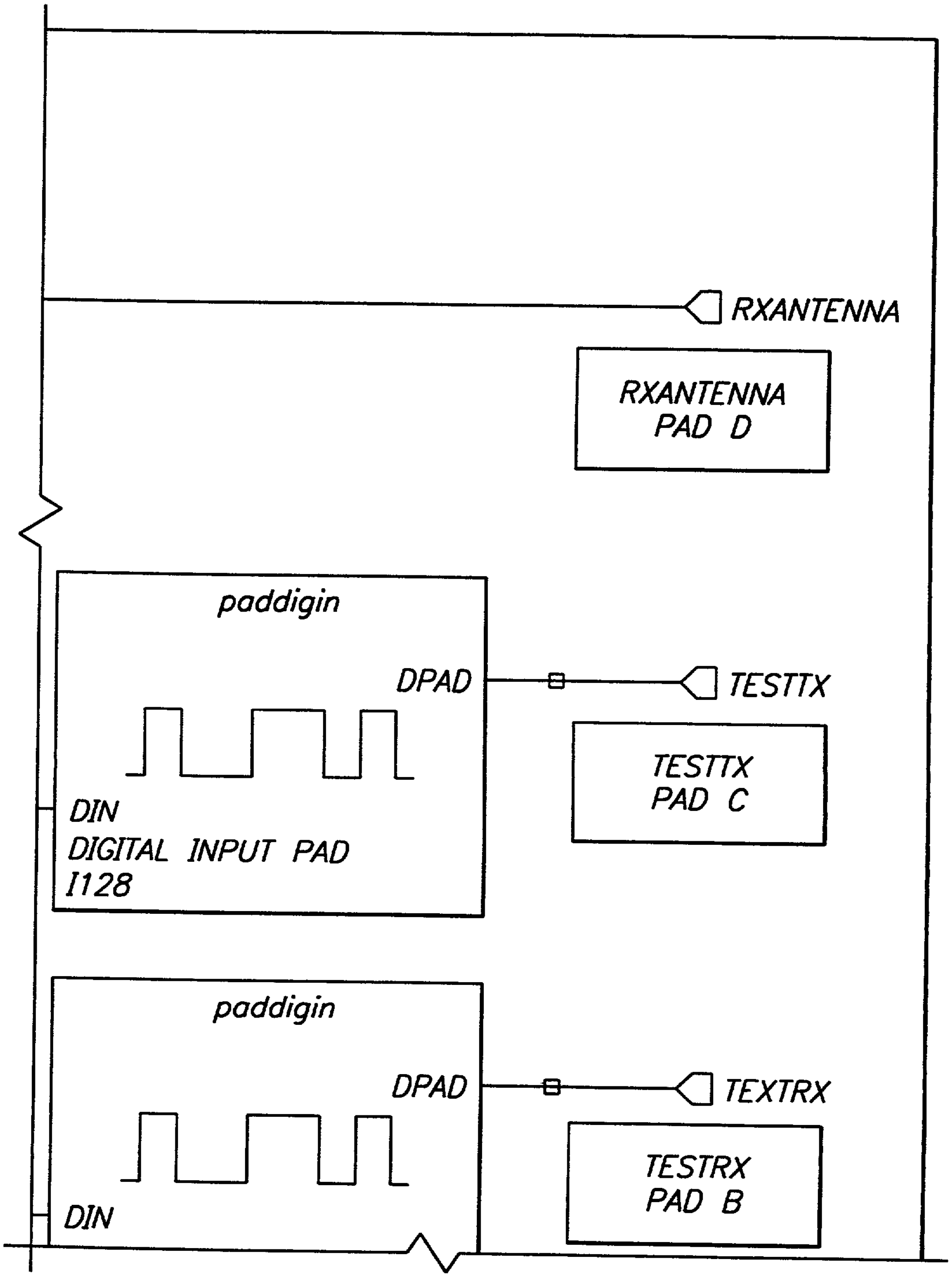

RXANTENNA
RXANTENNA PAD D
paddigin
DPAD
TESTTX
TESTTX PAD C
DIN
DIGITAL INPUT PAD
I128
paddigin
DPAD
TEXTRX
TESTRX PAD B
DIN

Fig 19AK

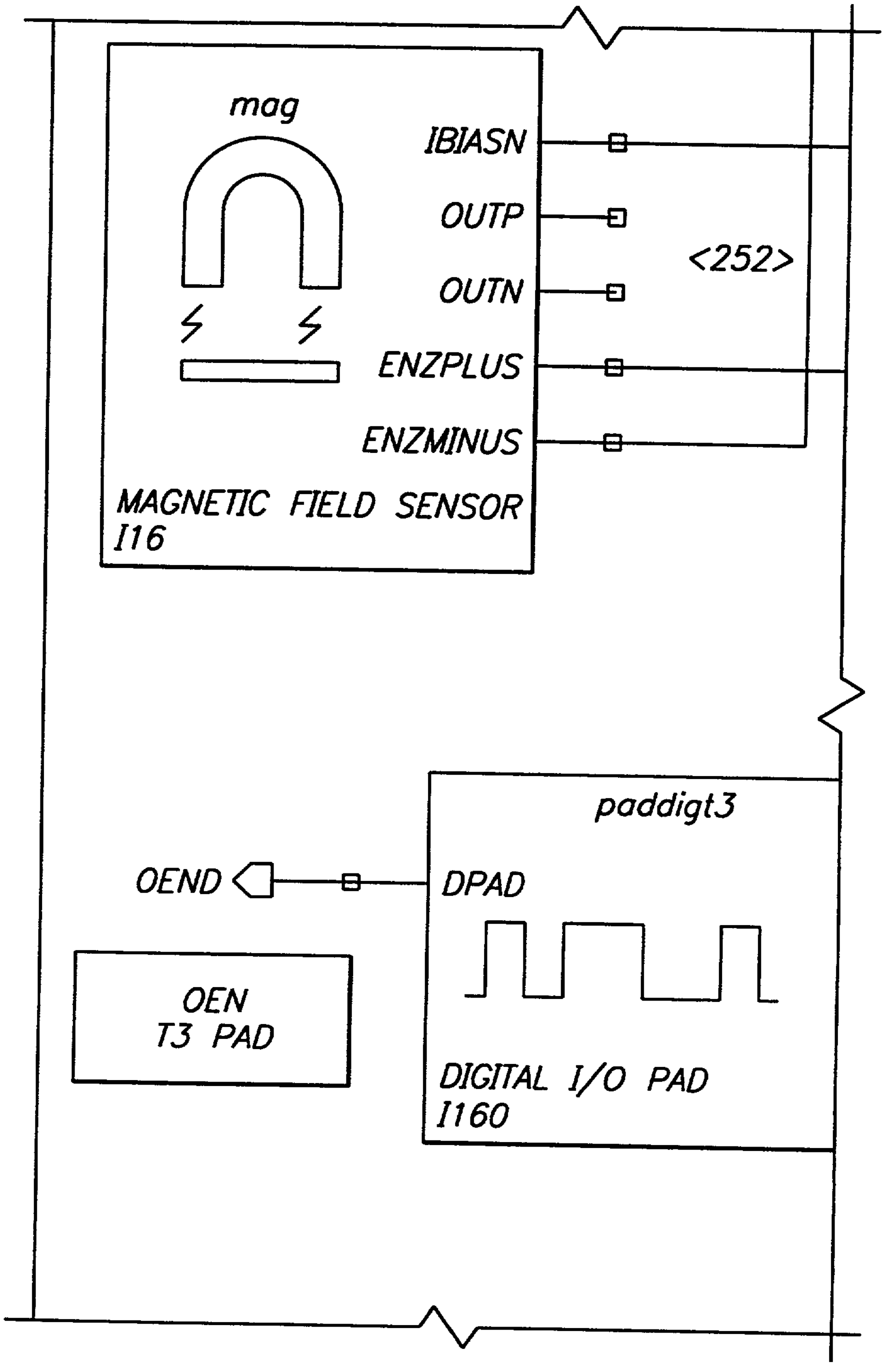

mag
IBIASN
OUTP
OUTN
ENZPLUS
ENZMINUS
<252>
MAGNETIC FIELD SENSOR
I16
paddigt3
OEND
DPAD
OEN
T3 PAD
DIGITAL I/O PAD
I160

Fig 19BA

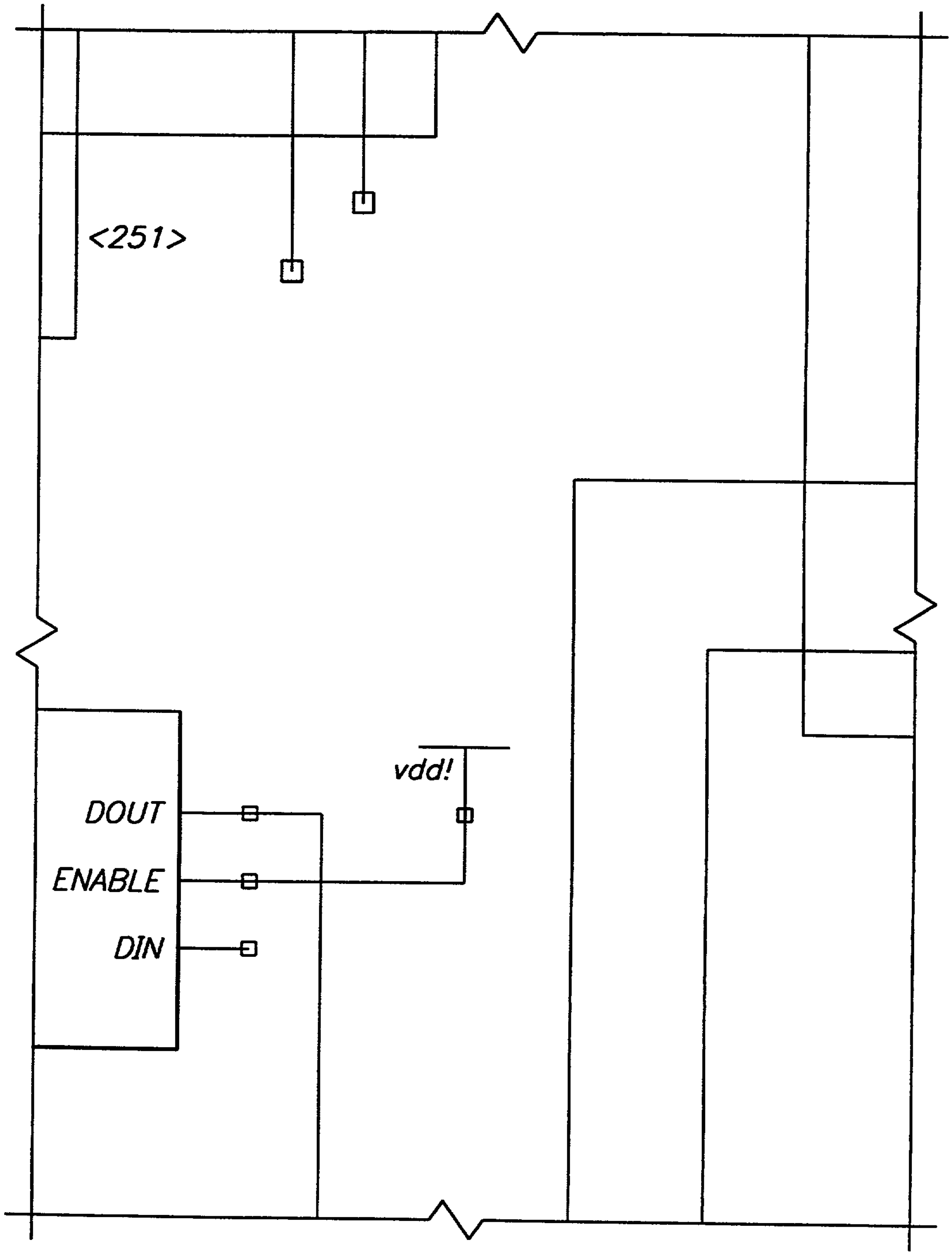


Fig 19BB

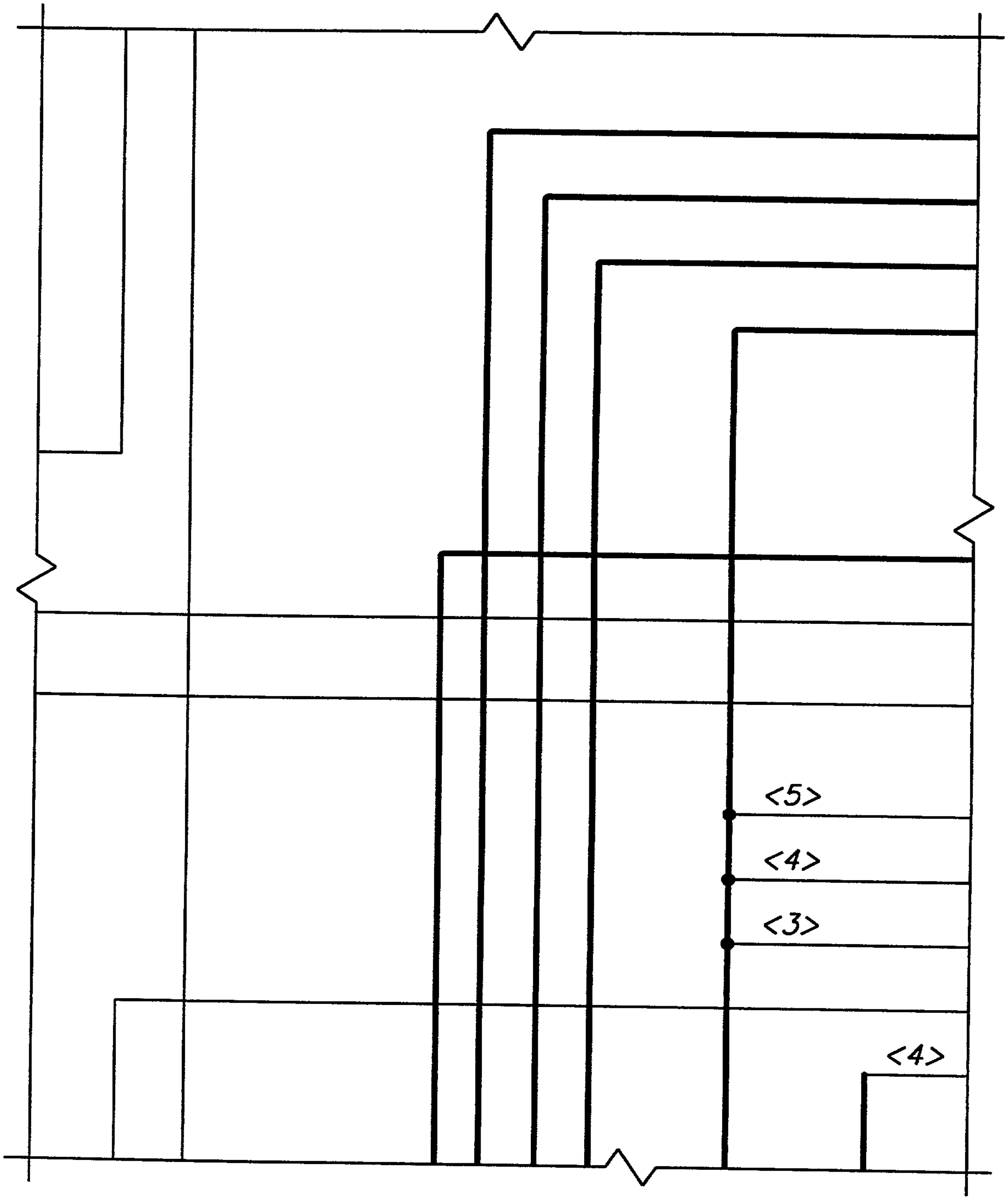


Fig 19BC

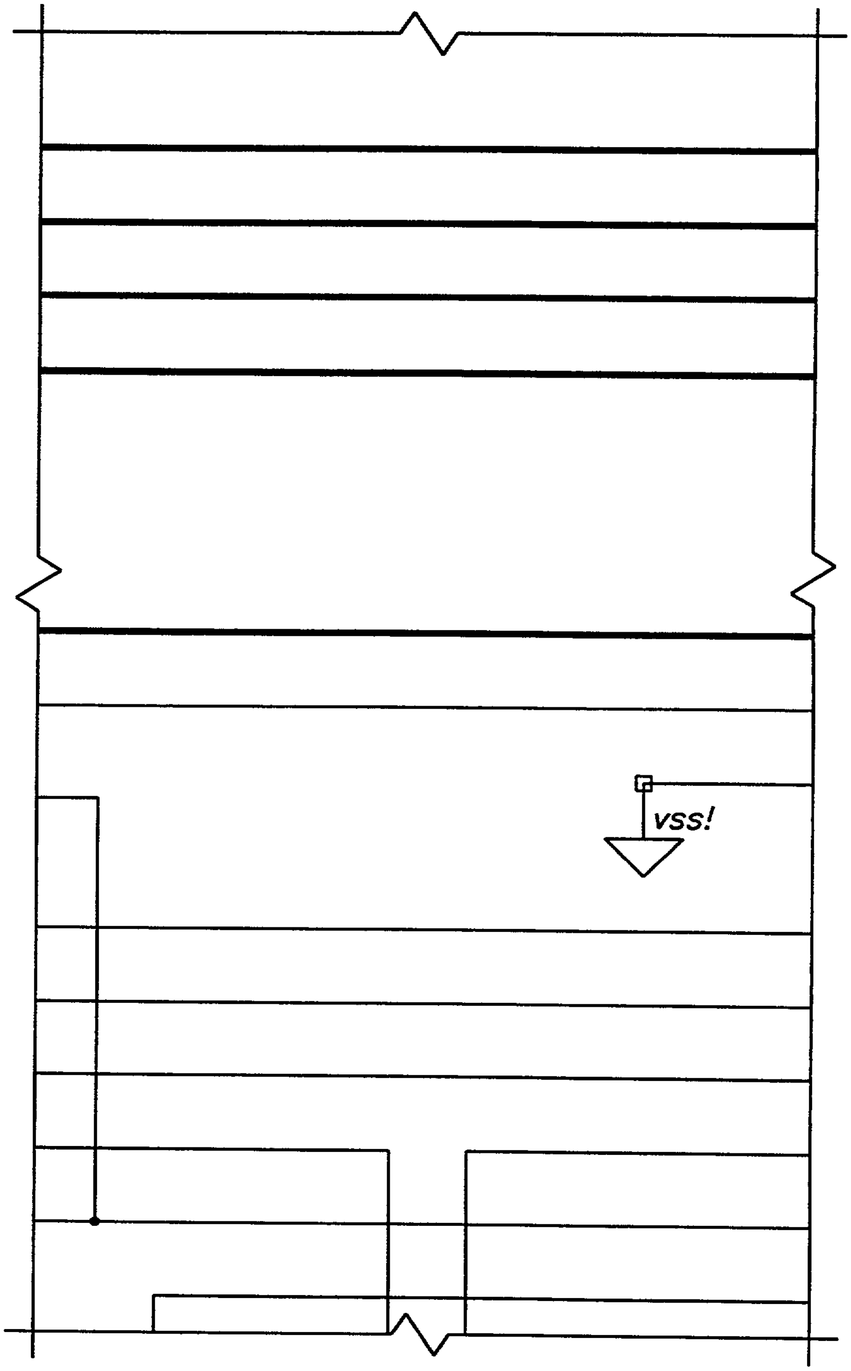


Fig 19BD

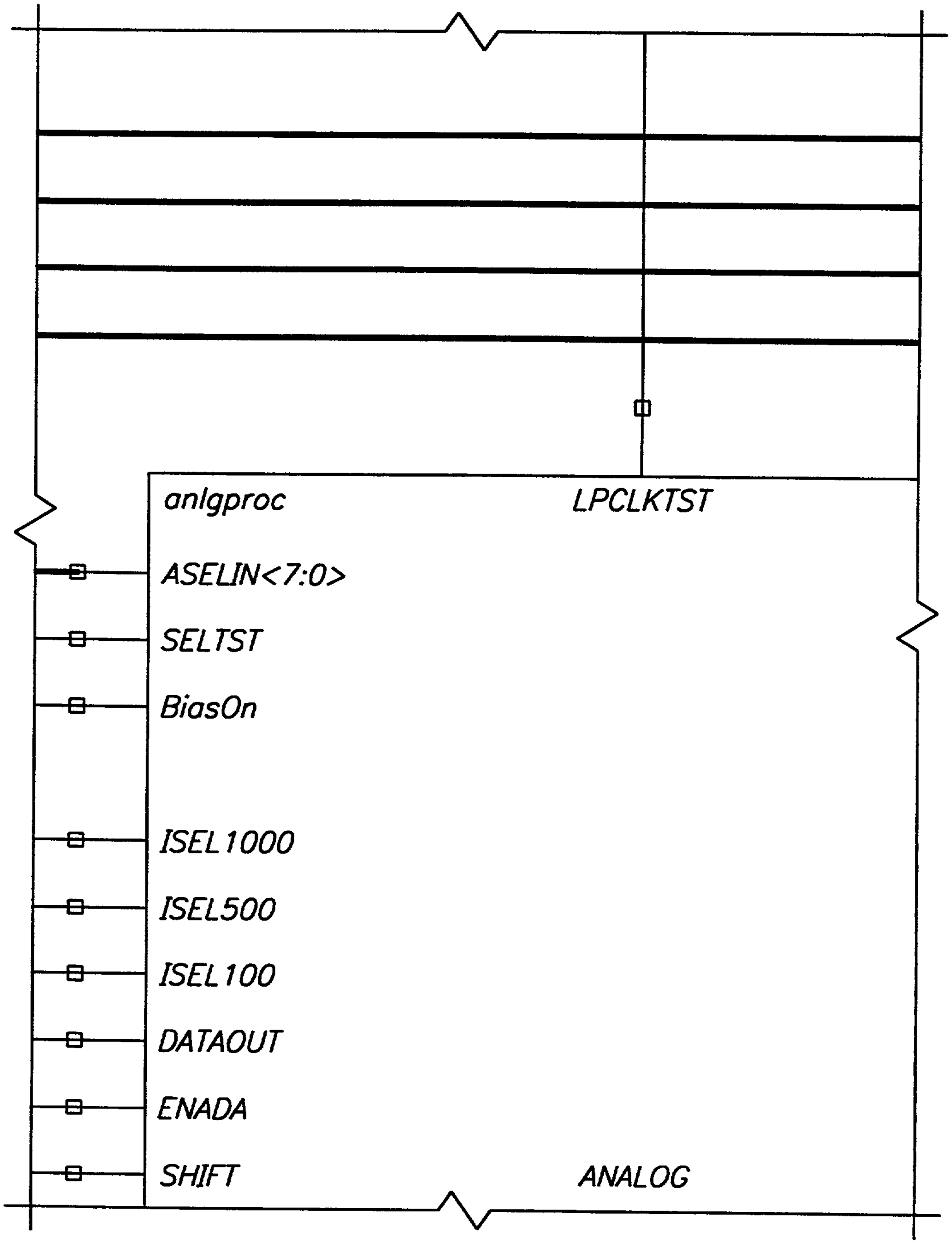

anlgproc
LPCLKTST
ASELIN<7:0>
SELTST
BiasOn
ISEL1000
ISEL500
ISEL100
DATAOUT
ENADA
SHIFT
ANALOG

Fig 19BE

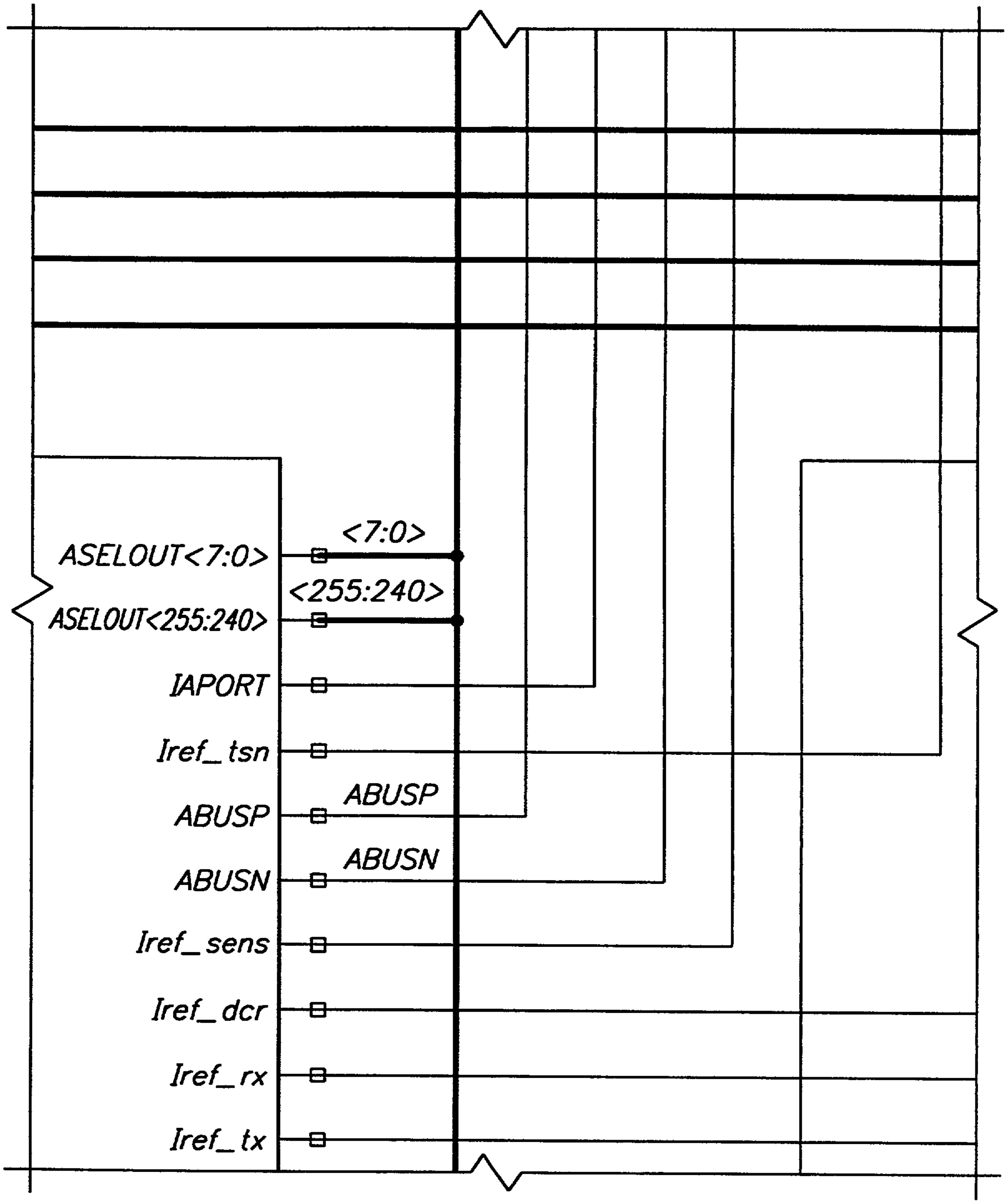

ASELOUT<7:0>
<7:0>
ASELOUT<255:240>
<255:240>
IAPORT
Iref_tsn
ABUSP
ABUSP
ABUSN
ABUSN
Iref_sens
Iref_dcr
Iref_rx
Iref_tx

Fig 19BF

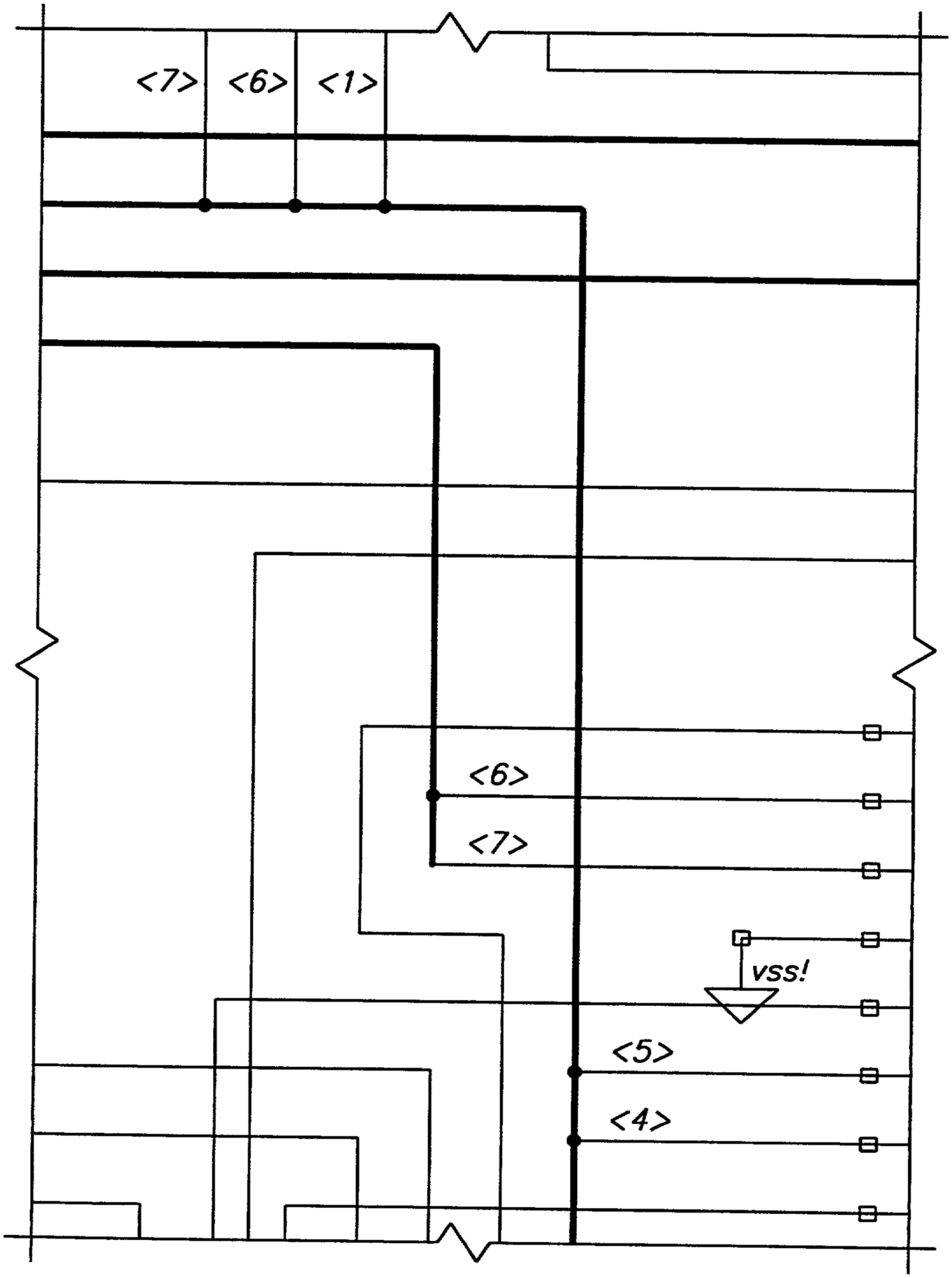


Fig 19BG

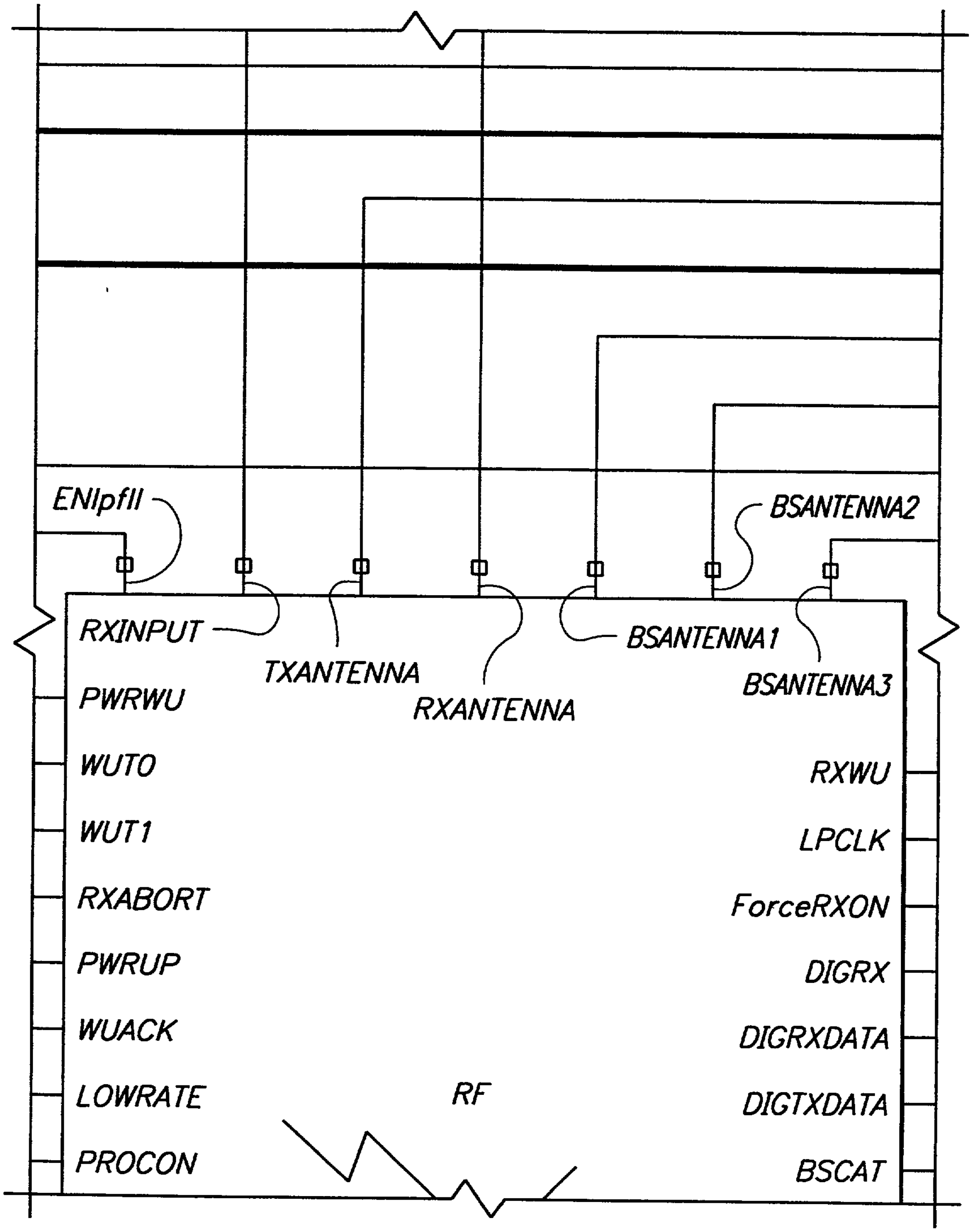

ENlpfII
RXINPUT
TXANTENNA
RXANTENNA
BSANTENNA1
BSANTENNA2
BSANTENNA3
PWRWU
WUTO
WUT1
RXABORT
PWRUP
WUACK
LOWRATE
PROCON
RF
RXWU
LPCLK
ForceRXON
DIGRX
DIGRXDATA
DIGTXDATA
BSCAT

Fig 19BH

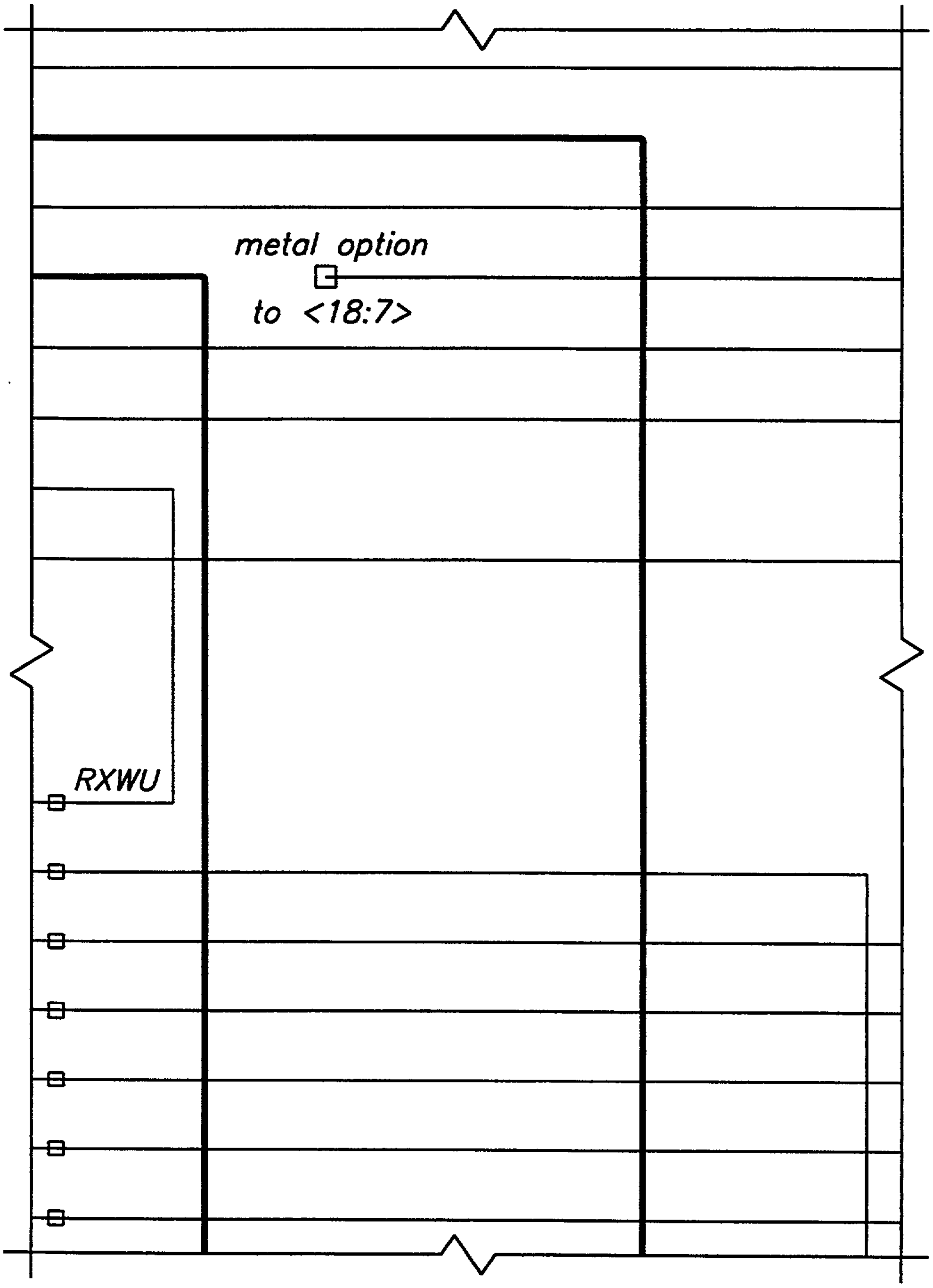


Fig 19BI

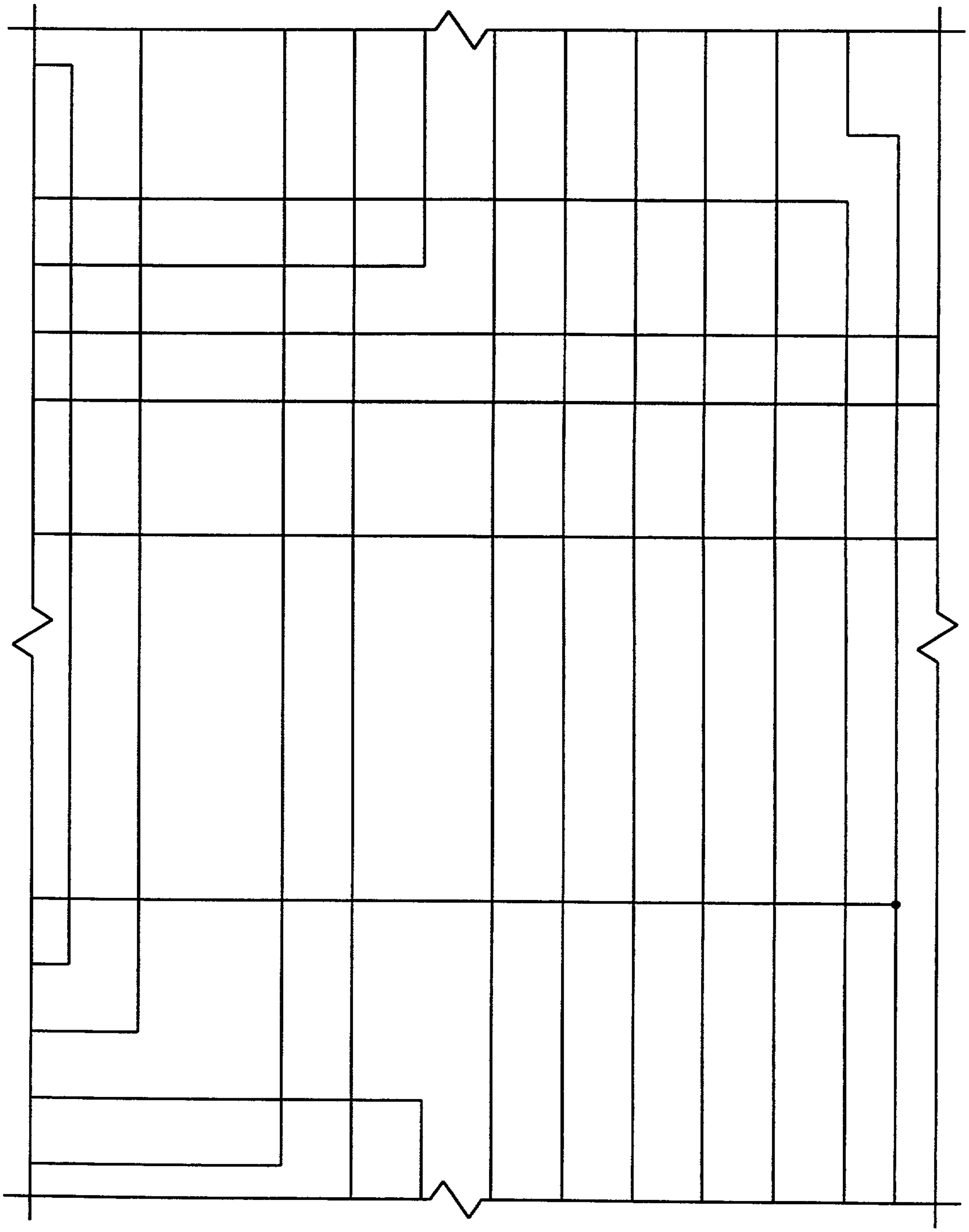


FIG 19BJ

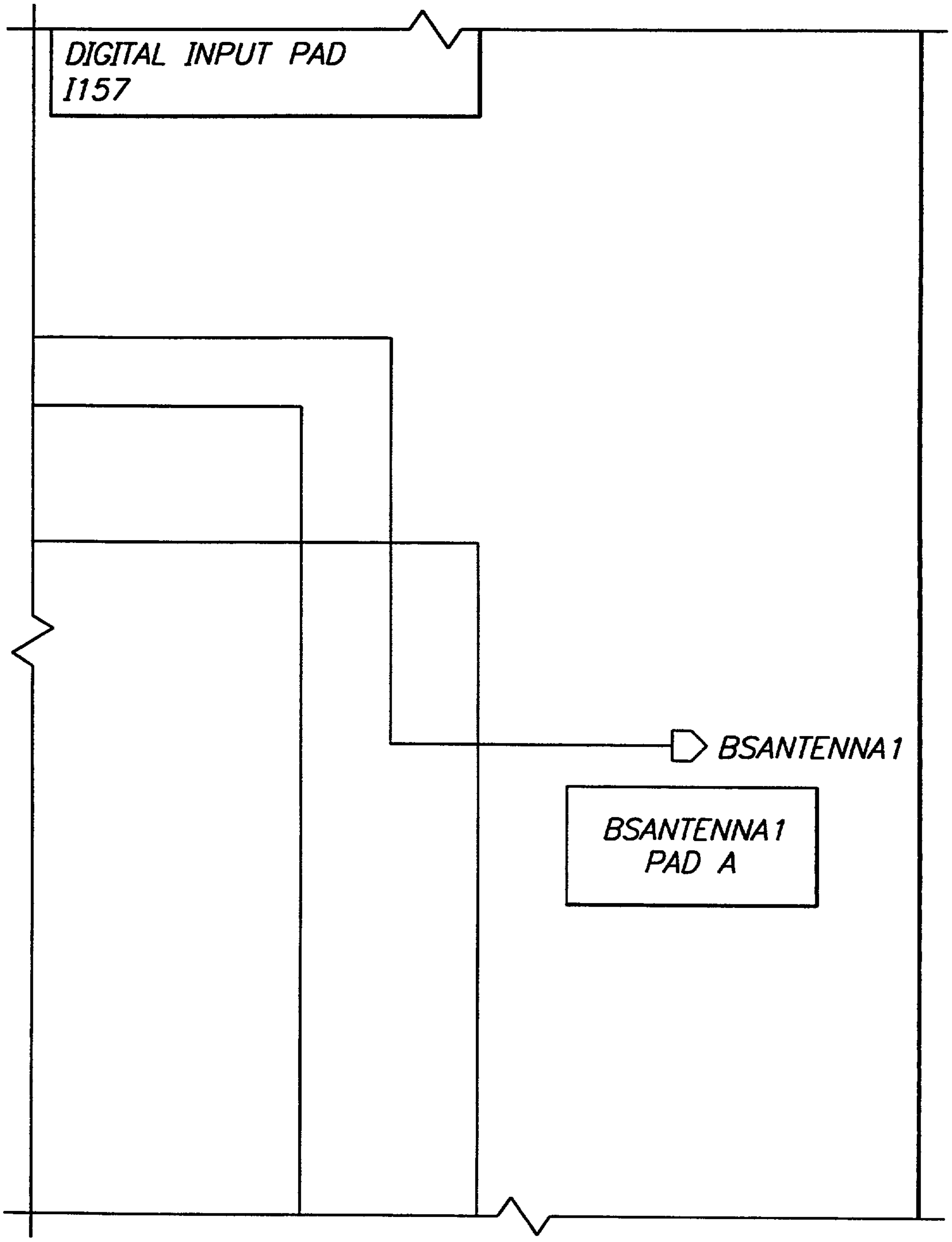


Fig 19BK

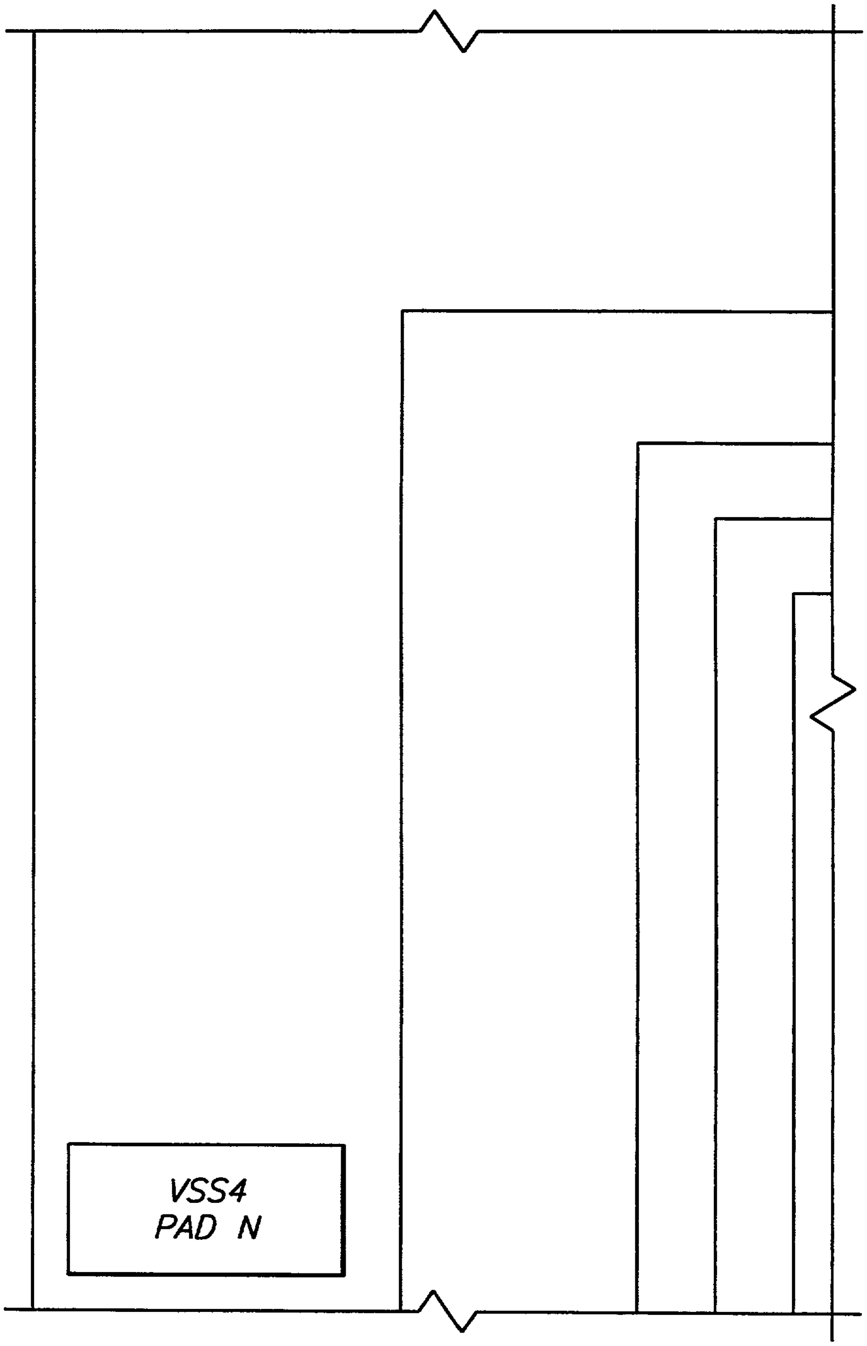


Fig 19CA

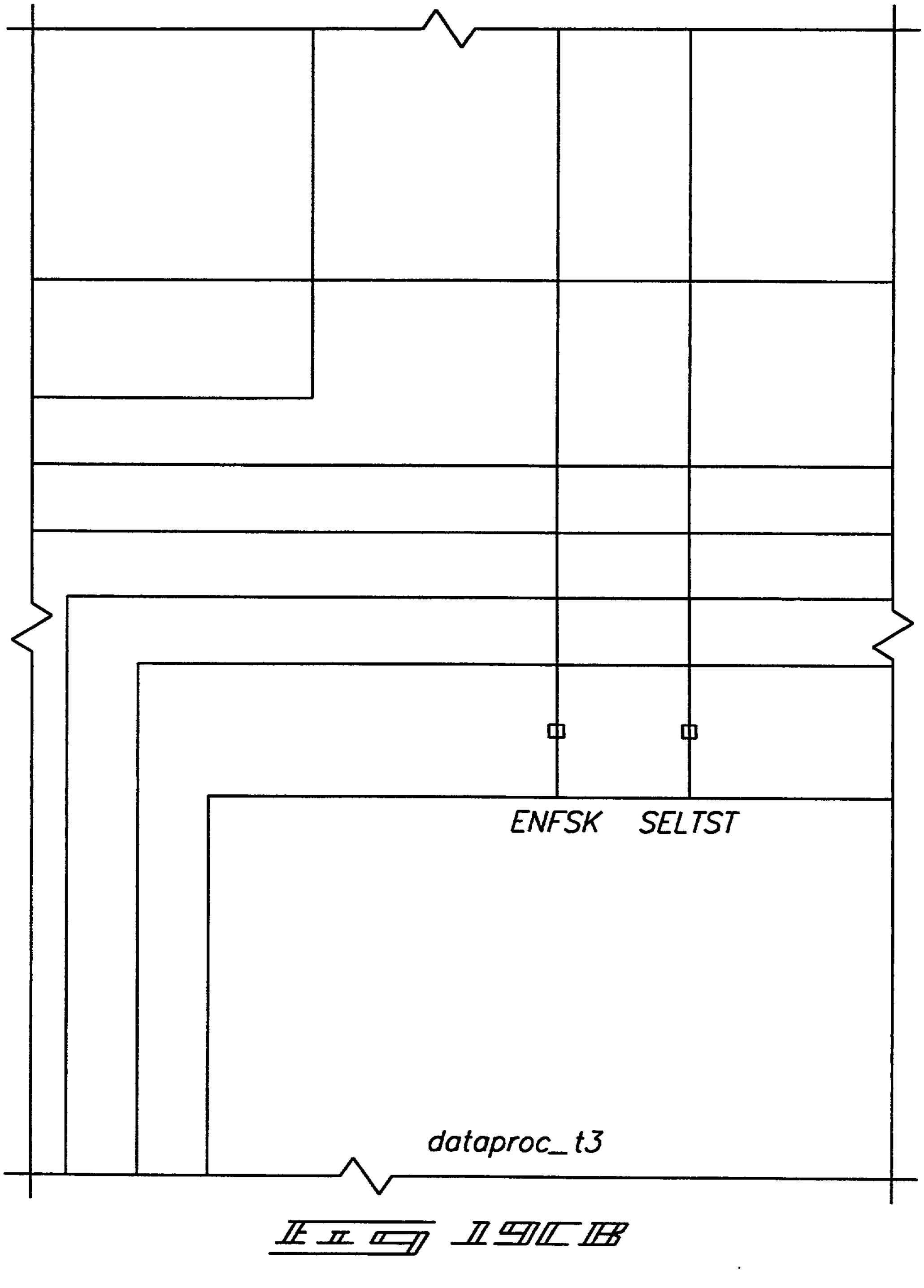


FIG 19CB

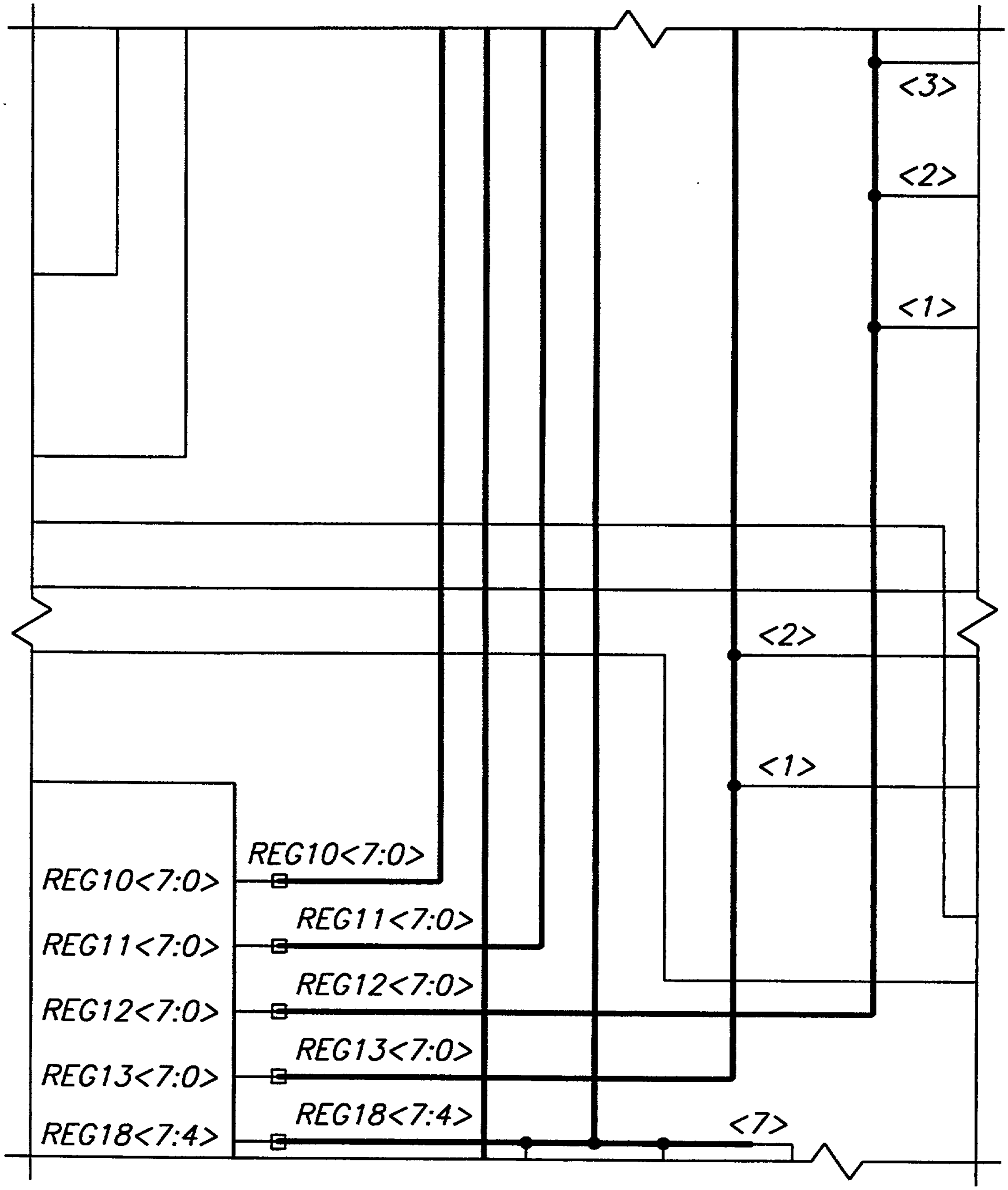

REG10<7:0>
REG11<7:0>
REG12<7:0>
REG13<7:0>
REG18<7:4>
REG10<7:0>
REG11<7:0>
REG12<7:0>
REG13<7:0>
REG18<7:4>
<3>
<2>
<1>
<2>
<1>
<7>

Fig 19CC

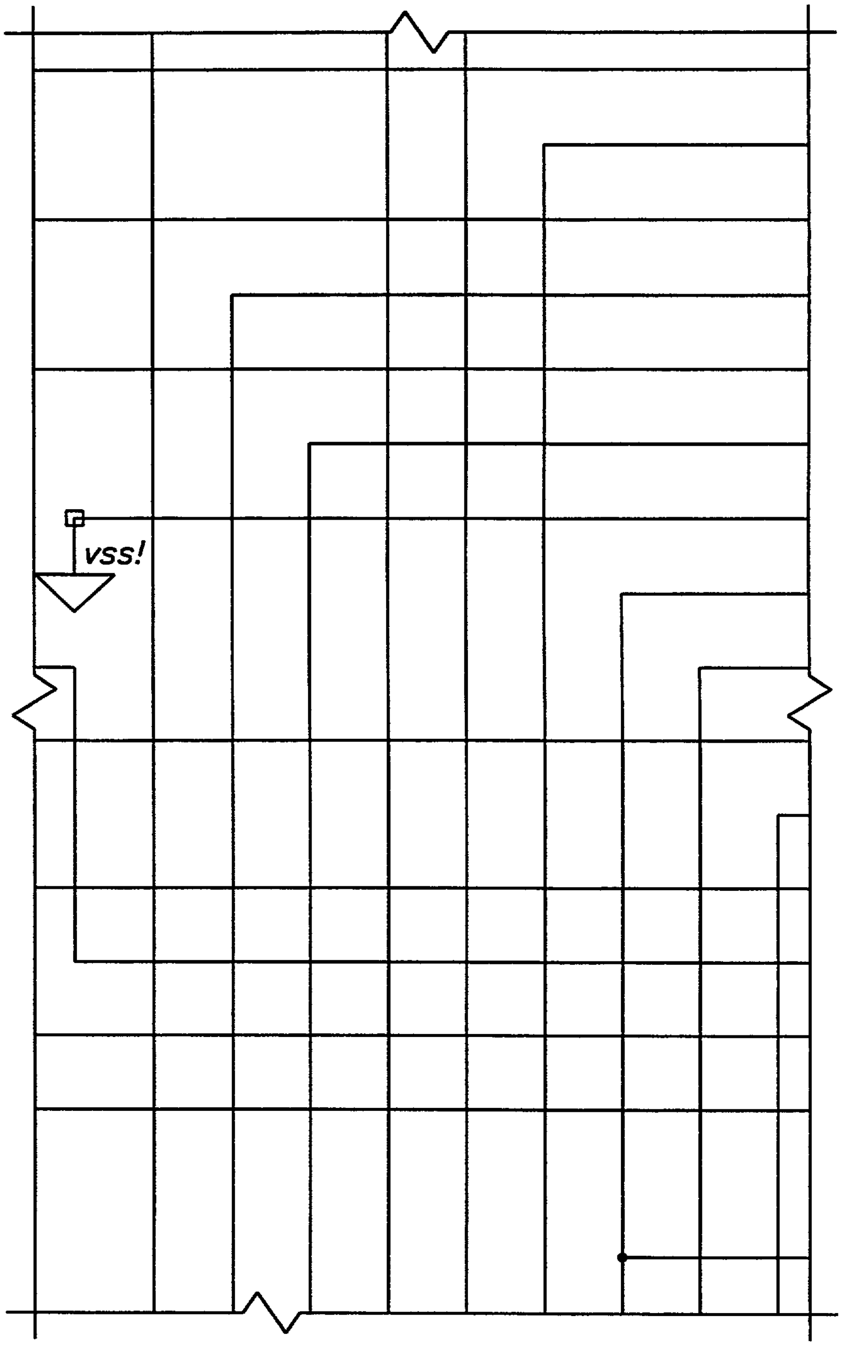


Fig 19CD

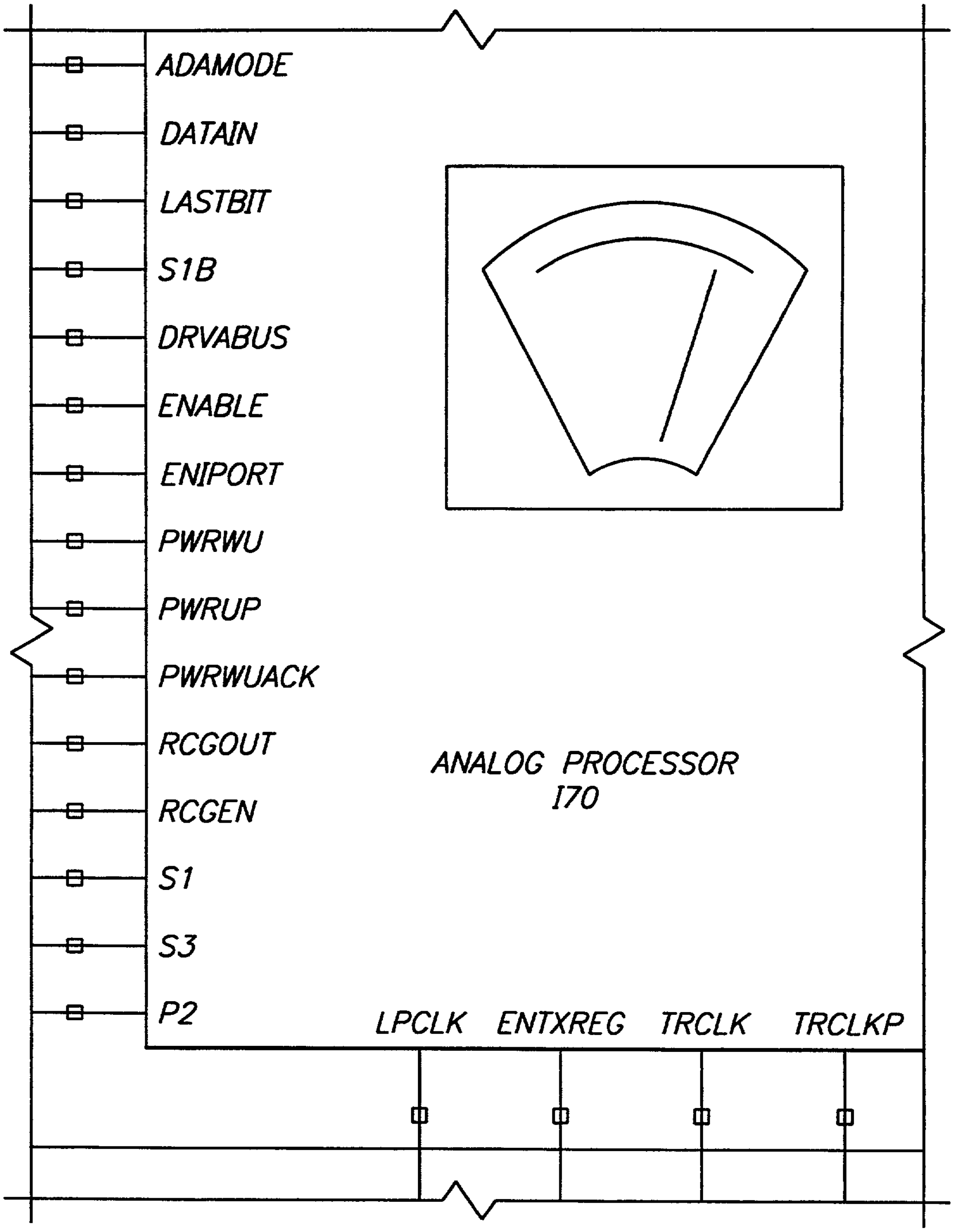

ADAMODE
DATAIN
LASTBIT
S1B
DRVABUS
ENABLE
ENIPORT
PWRWU
PWRUP
PWRWUACK
RCGOUT
RCGEN
S1
S3
P2
ANALOG PROCESSOR
I70
LPCLK
ENTXREG
TRCLK
TRCLKP

Fig 19CE

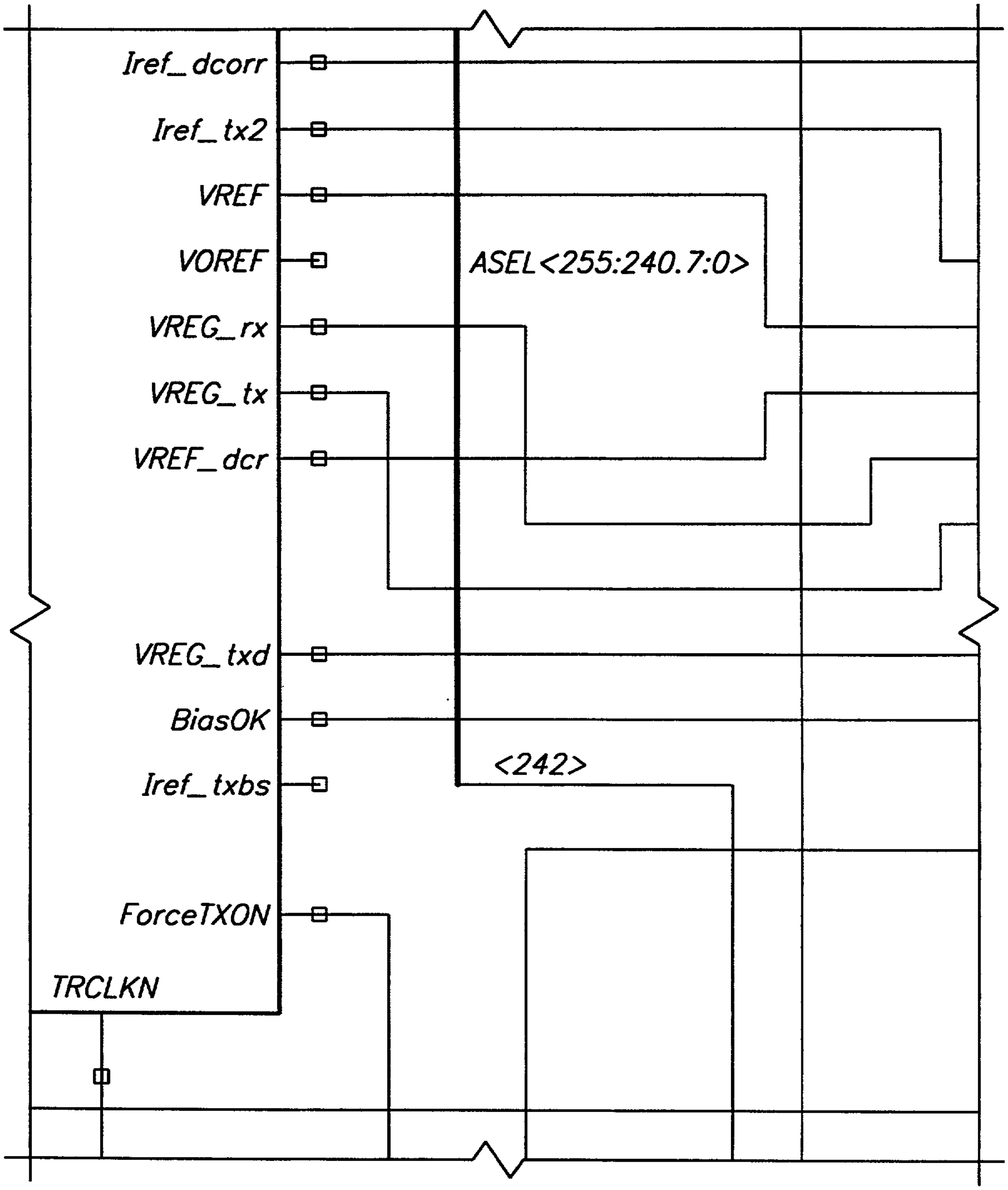

Iref_dcorr
Iref_tx2
VREF
VOREF
ASEL<255:240.7:0>
VREG_rx
VREG_tx
VREF_dcr
VREG_txd
BiasOK
<242>
Iref_txbs
ForceTXON
TRCLKN

Fig 19CF

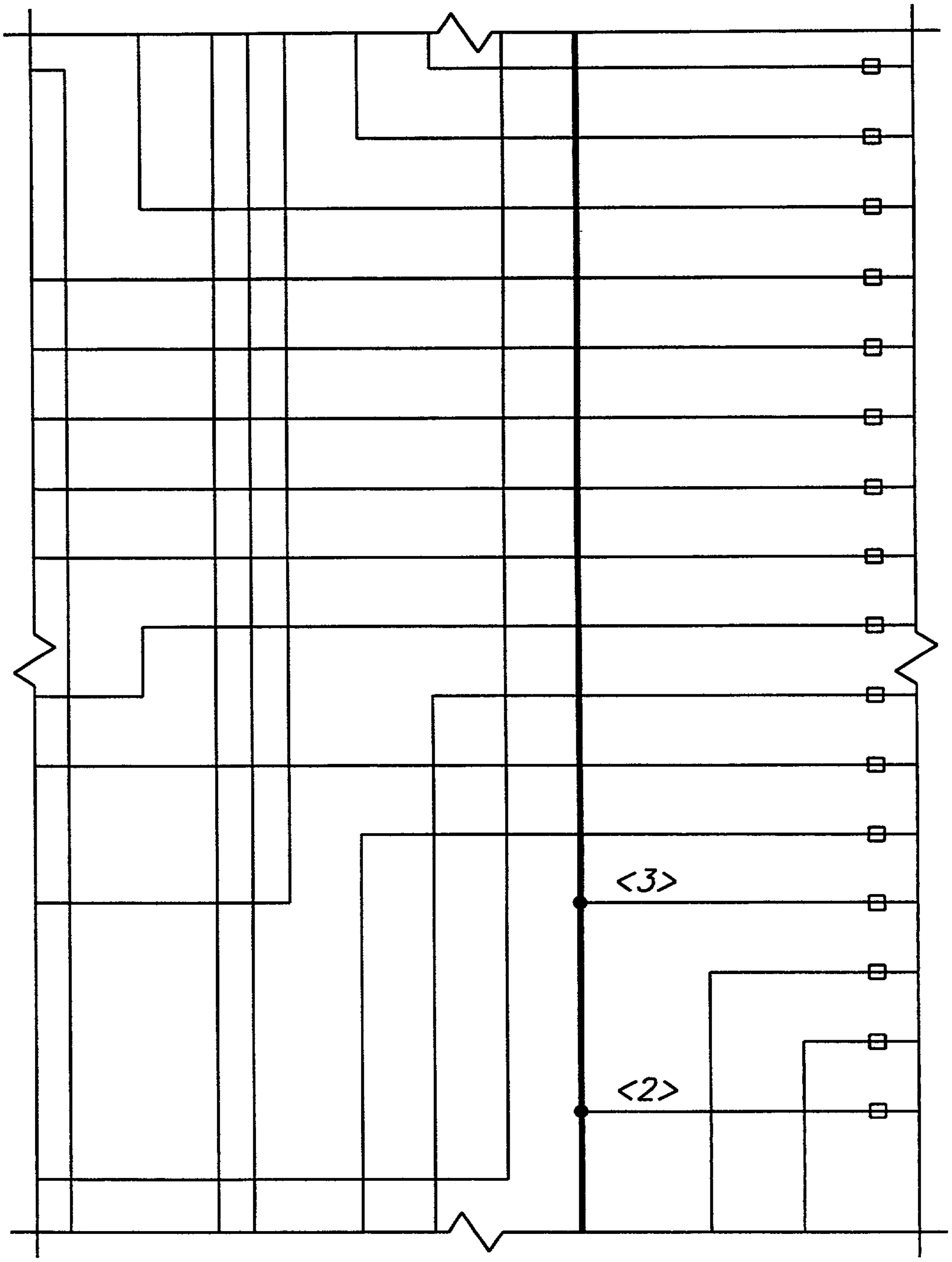


Fig 19CG

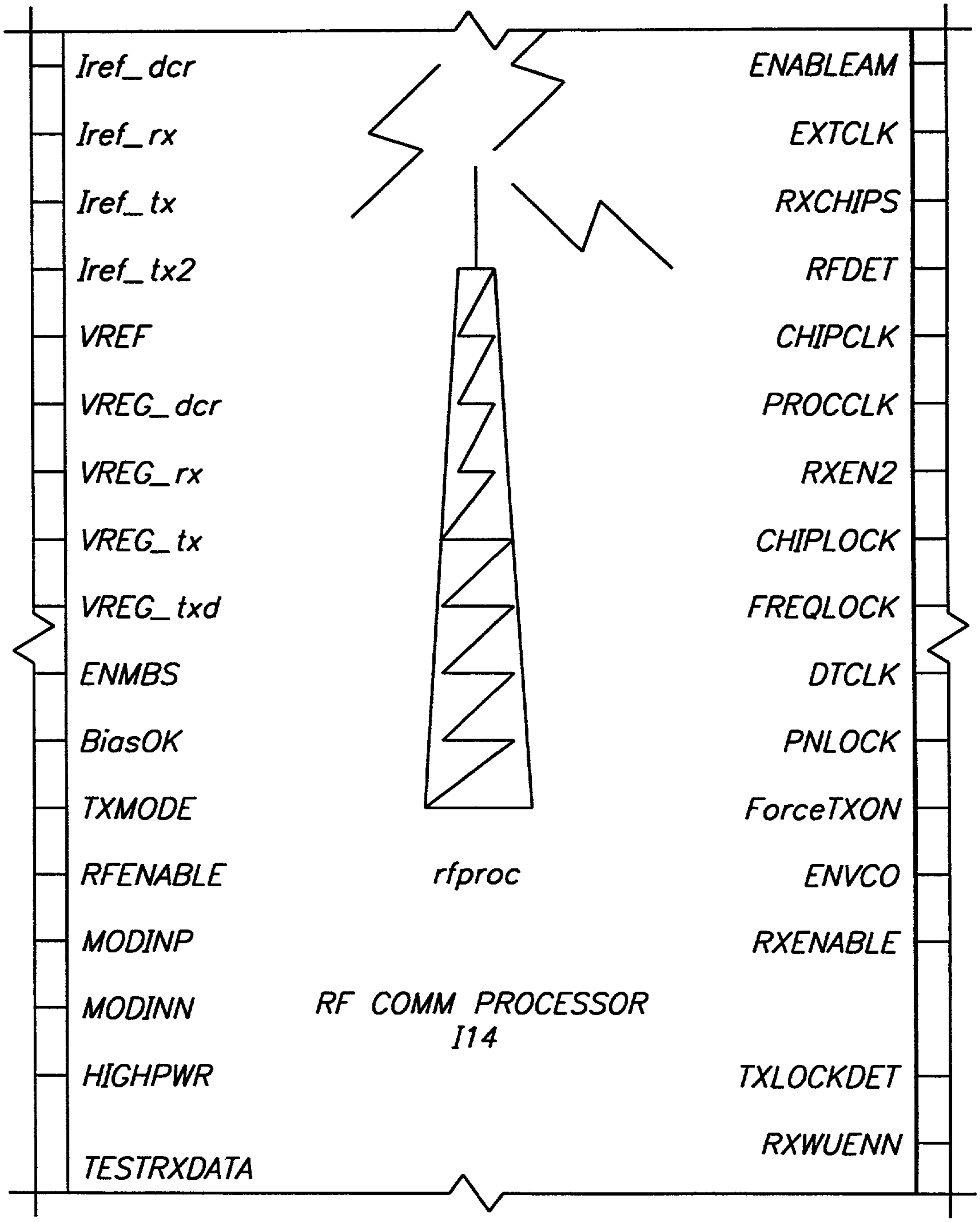

Iref_dcr
Iref_rx
Iref_tx
Iref_tx2
VREF
VREG_dcr
VREG_rx
VREG_tx
VREG_txd
ENMBS
BiasOK
TXMODE
RFENABLE
MODINP
MODINN
HIGHPWR
TESTRXDATA
ENABLEAM
EXTCLK
RXCHIPS
RFDET
CHIPCLK
PROCCLK
RXEN2
CHIPLOCK
FREQLOCK
DTCLK
PNLOCK
ForceTXON
ENVCO
RXENABLE
TXLOCKDET
RXWUENN
rfproc
RF COMM PROCESSOR
I14

Fig 19CH

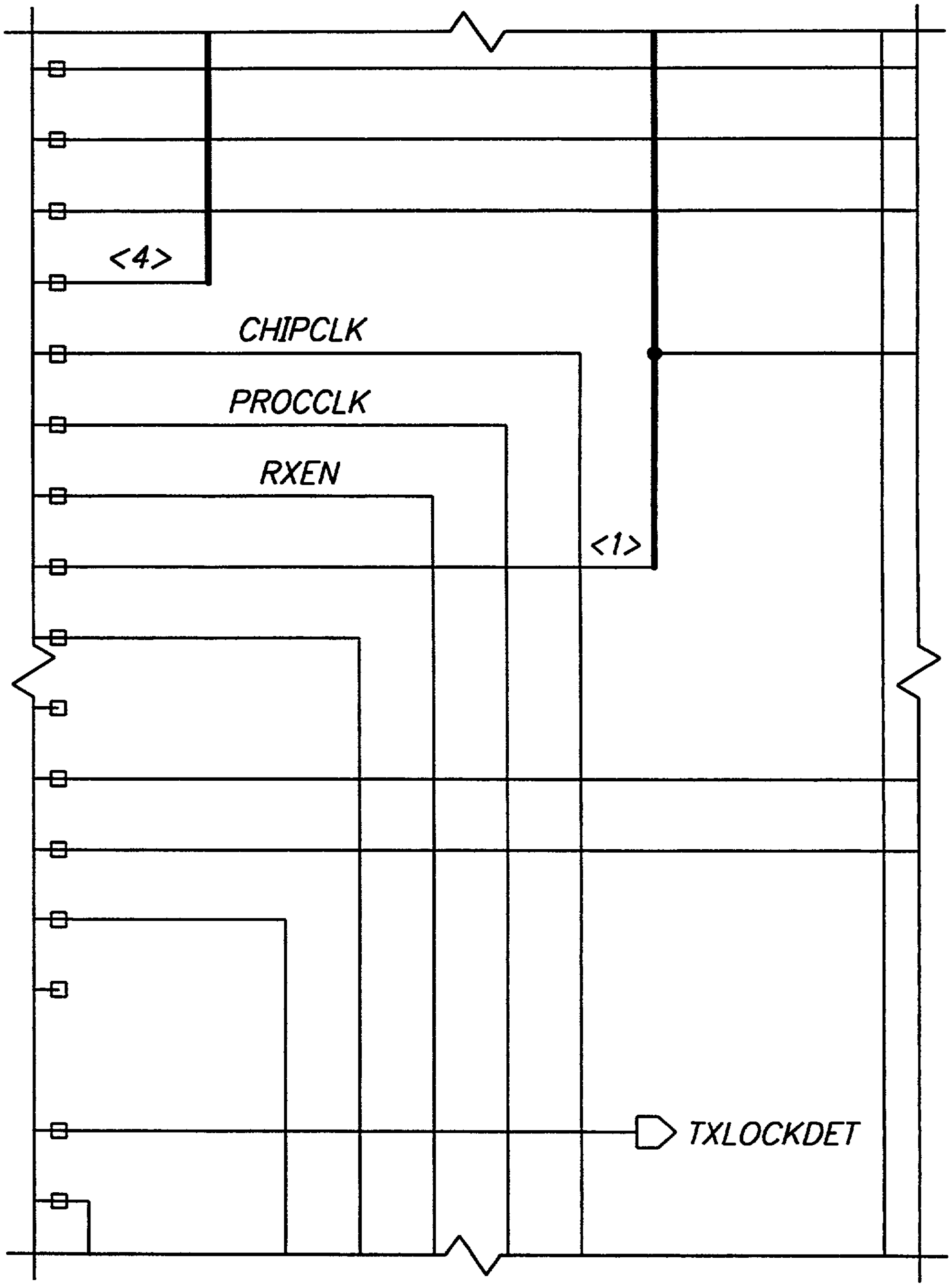


Fig 19CI

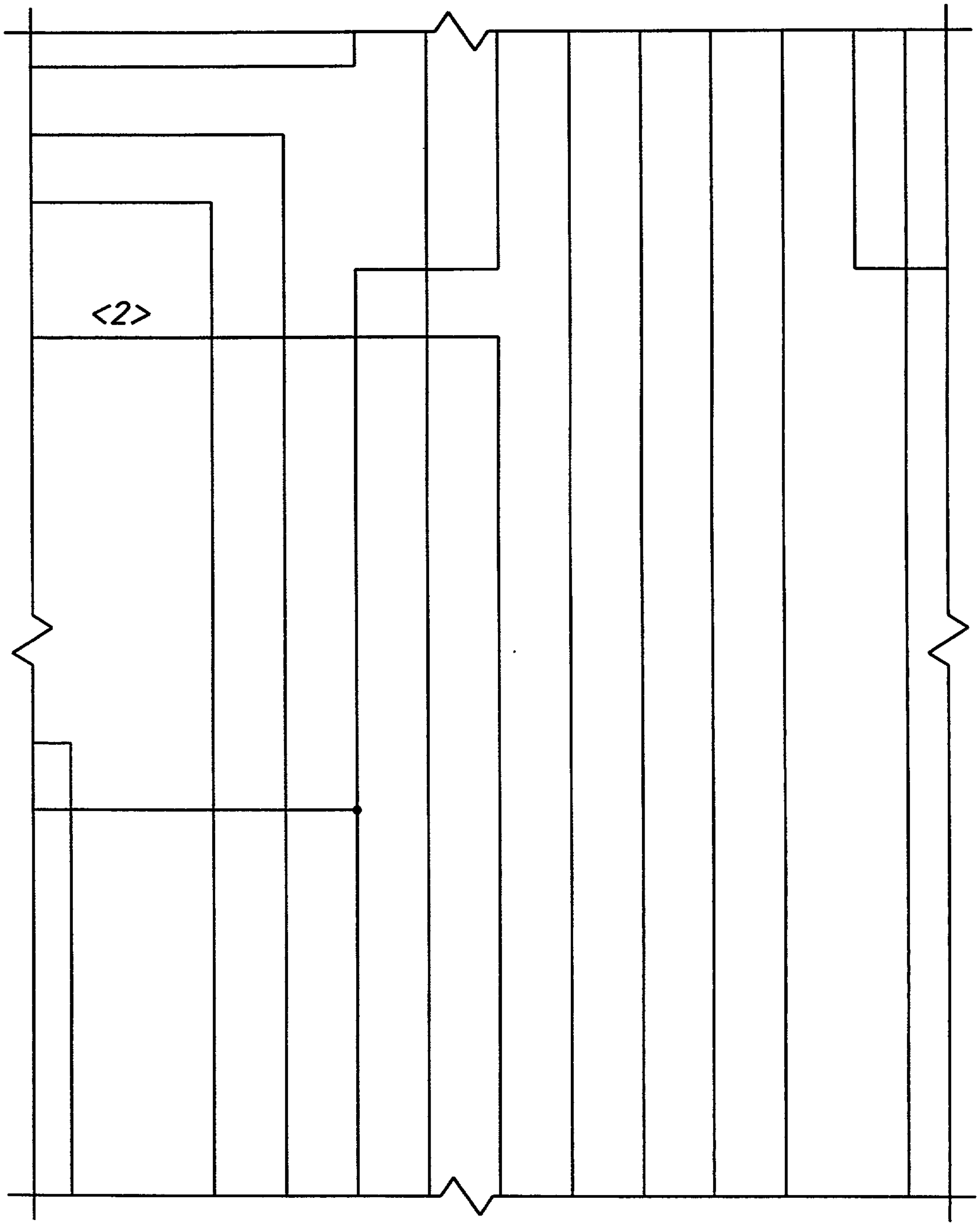


Fig 19Cd

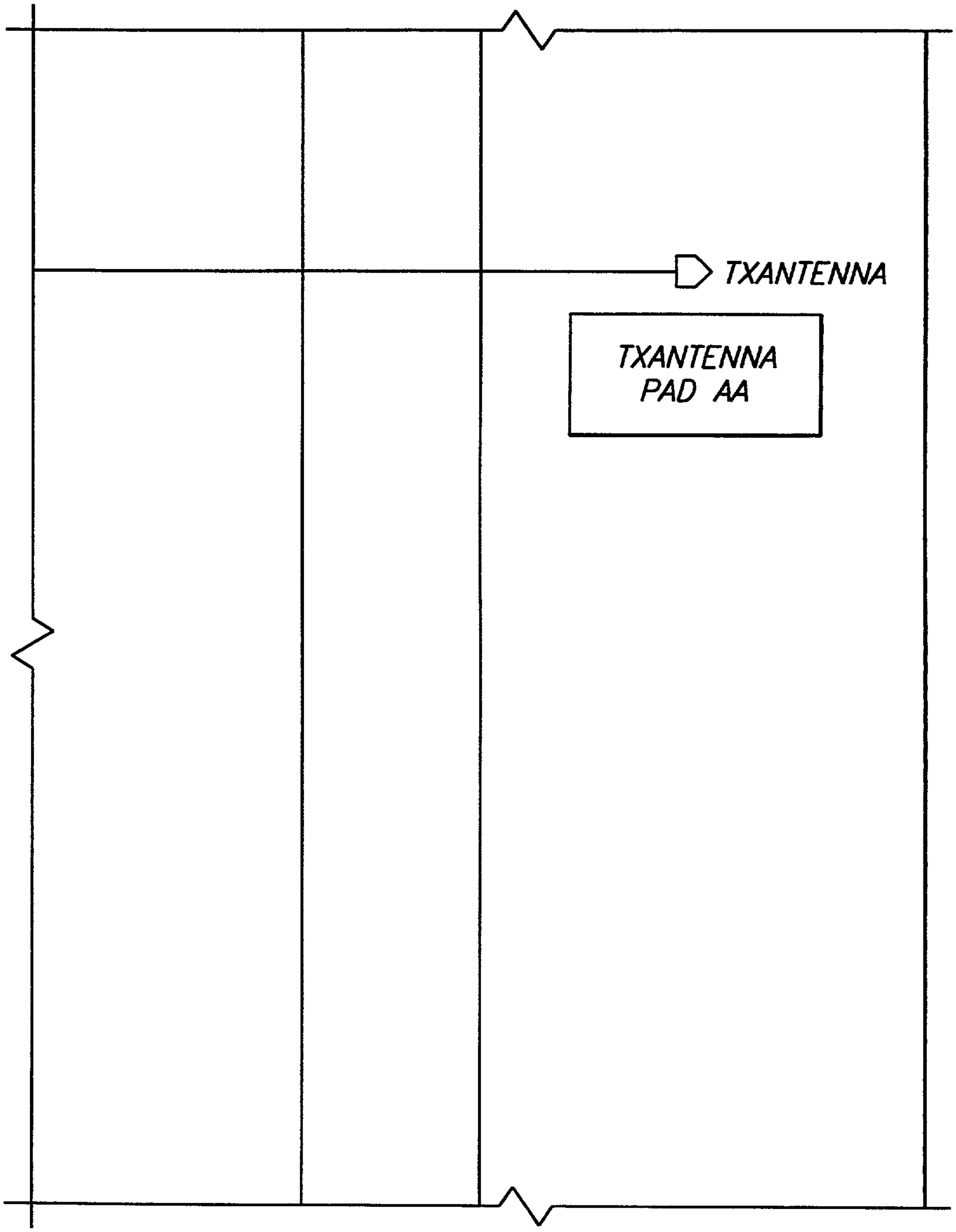


Fig 19CK

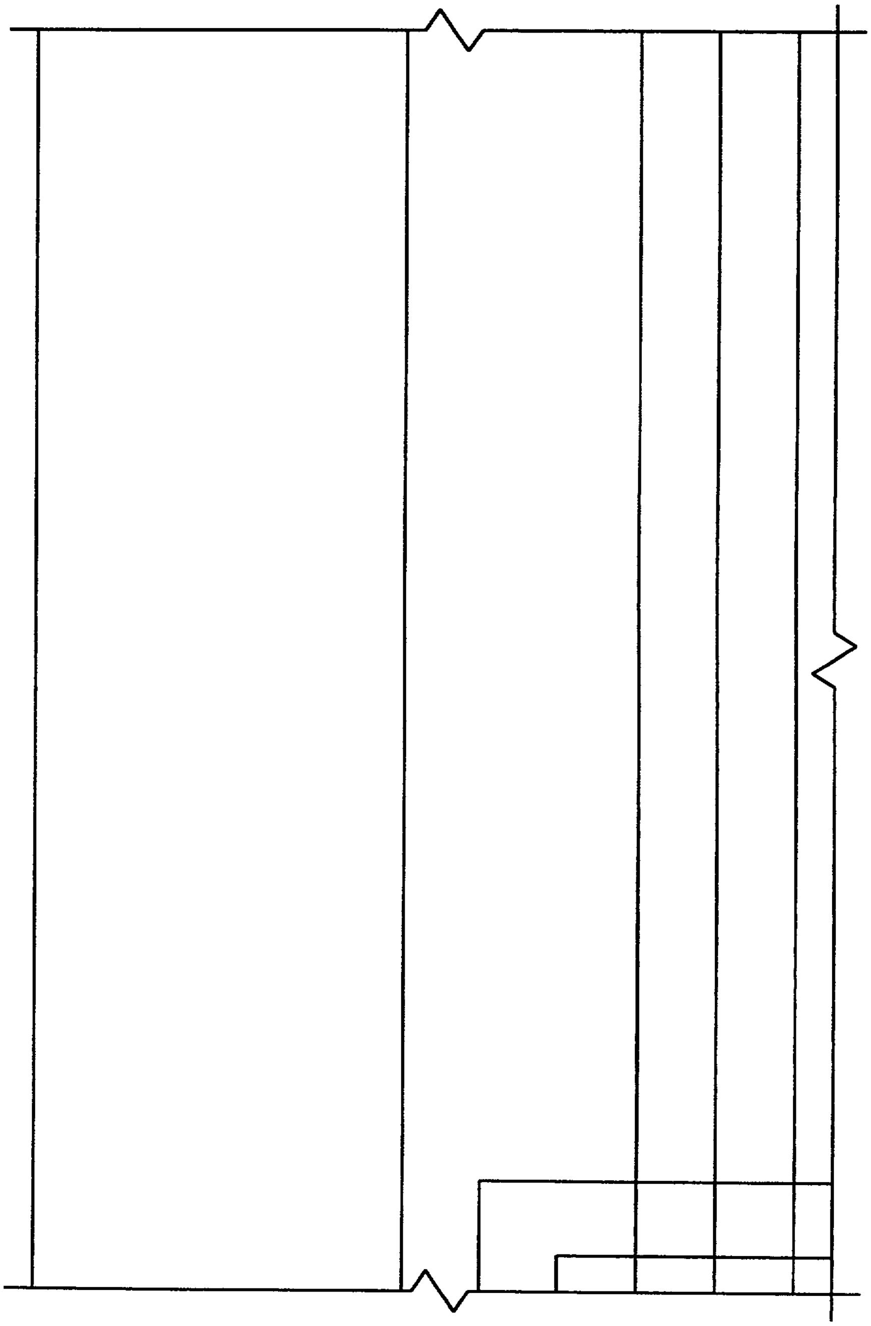


Fig 19DA

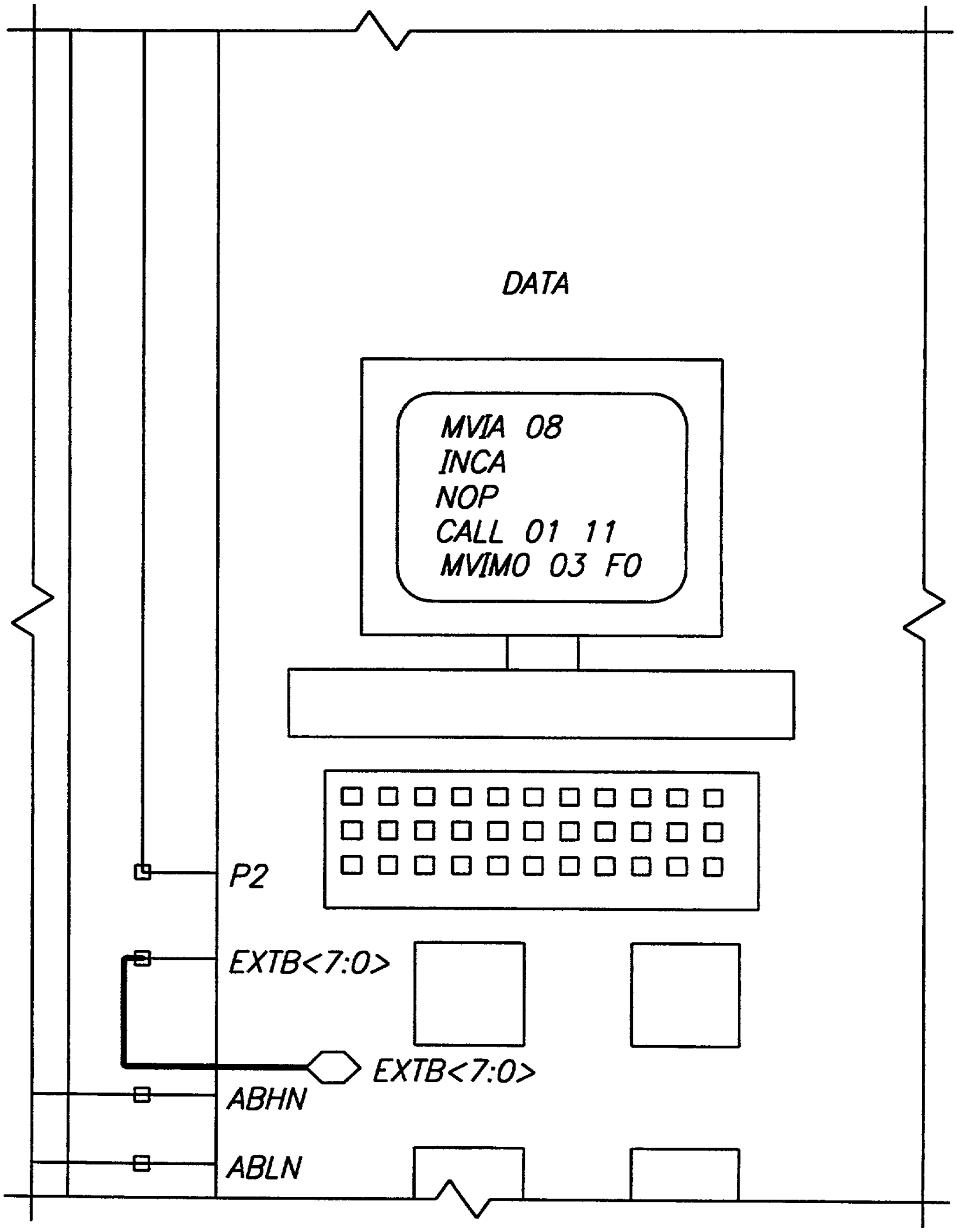

DATA
MVIA 08
INCA
NOP
CALL 01 11
MVIMO 03 F0
P2
EXTB<7:0>
EXTB<7:0>
ABHN
ABLN

Fig 19DB

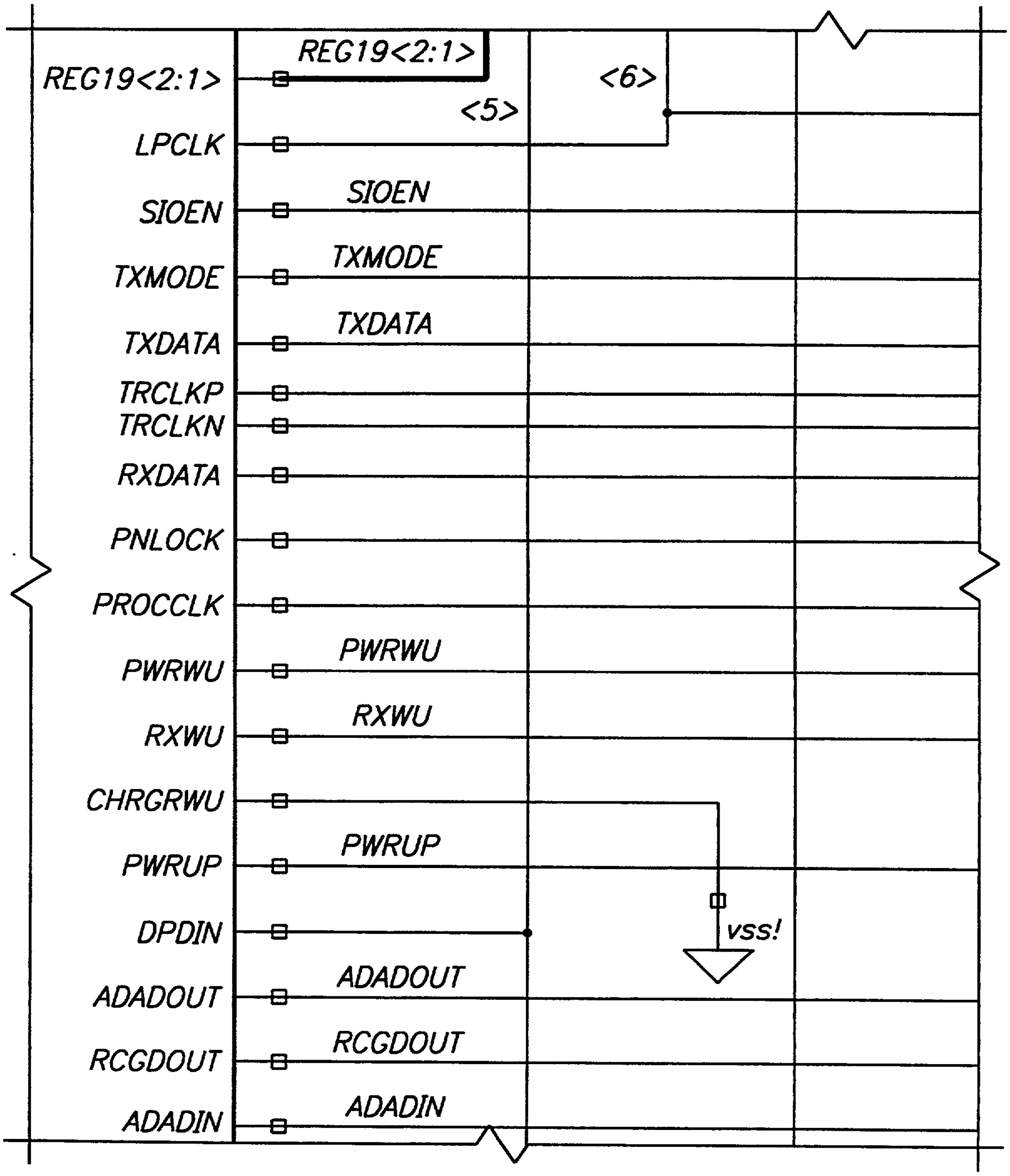

REG19<2:1>
LPCLK
SIOEN
TXMODE
TXDATA
TRCLKP
TRCLKN
RXDATA
PNLOCK
PROCCLK
PWRWU
RXWU
CHRGRWU
PWRUP
DPDIN
ADADOUT
RCGDOUT
ADADIN
REG19<2:1>
<5>
<6>
SIOEN
TXMODE
TXDATA
PWRWU
RXWU
PWRUP
vss!
ADADOUT
RCGDOUT
ADADIN

Fig 19DC

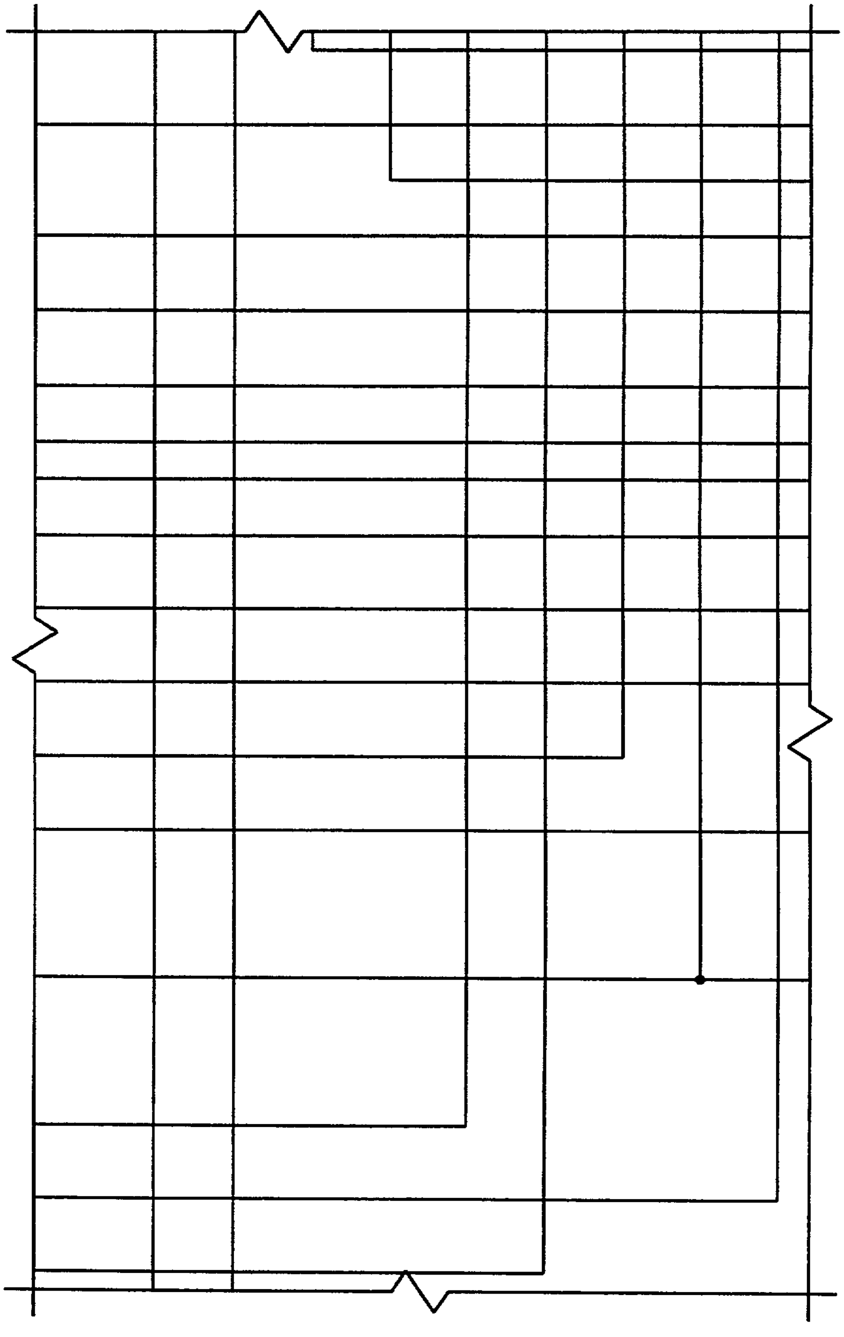


Fig 19DD

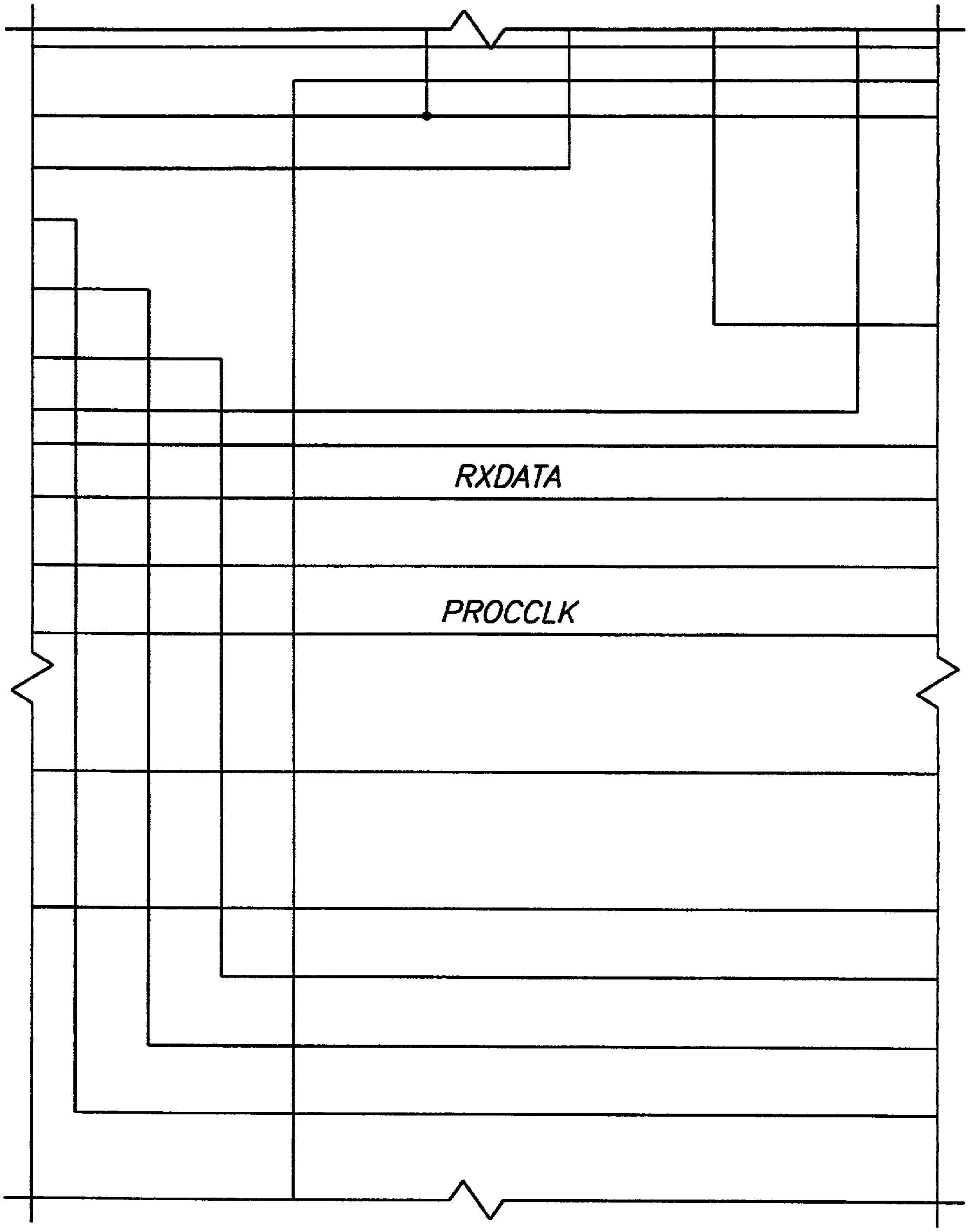


Fig 19DE

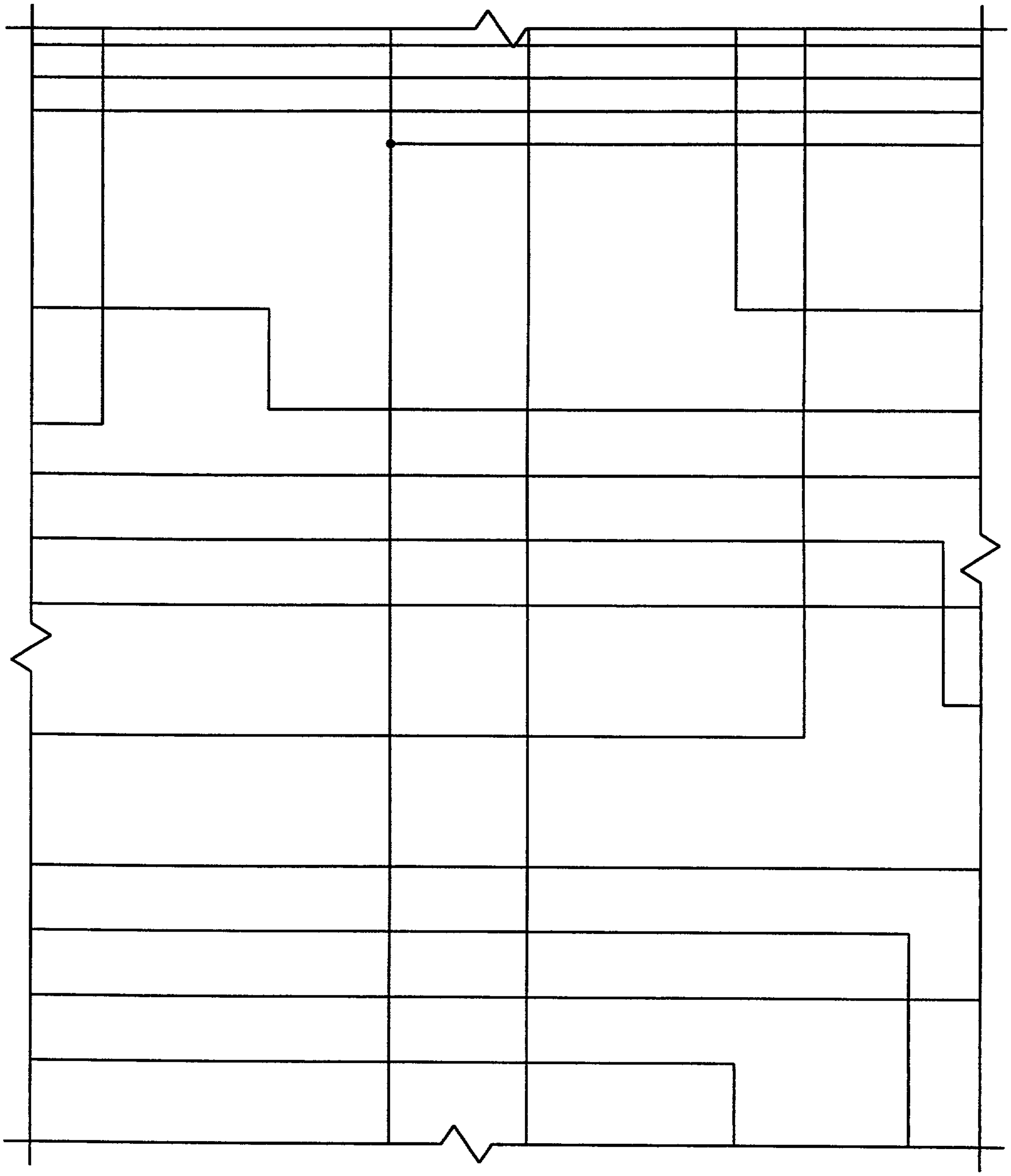


Fig 19DF

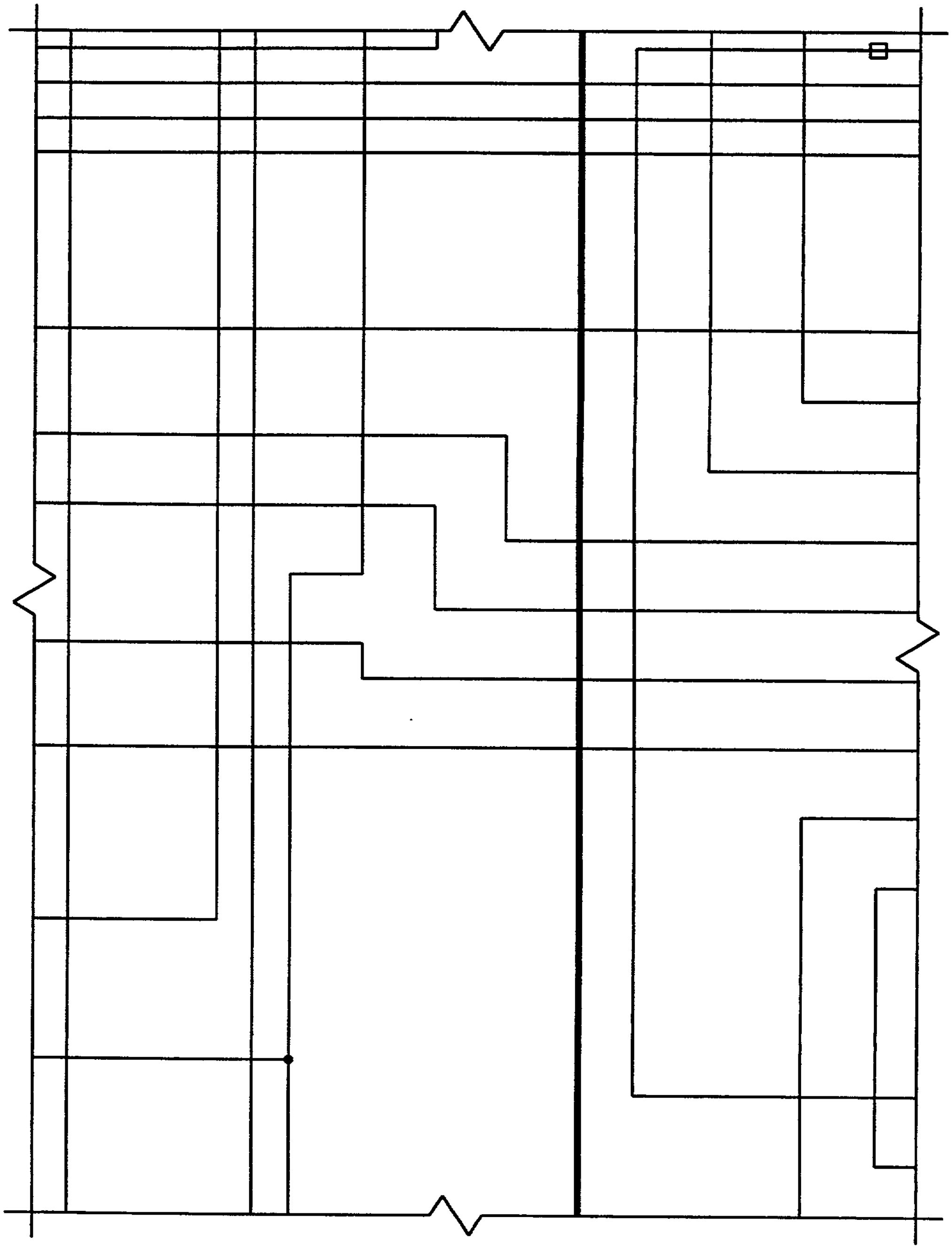


Fig 19DG

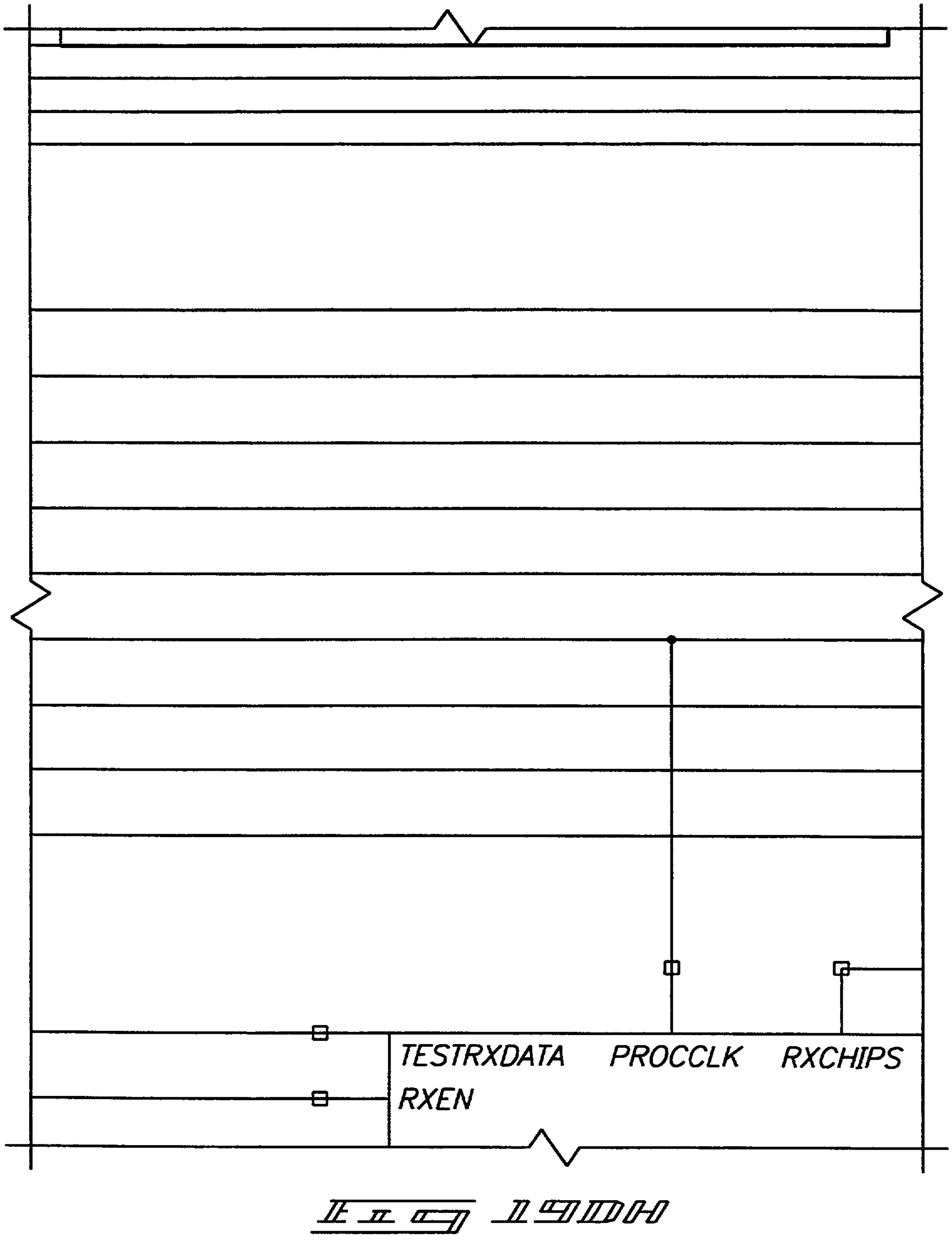


Fig 19DH

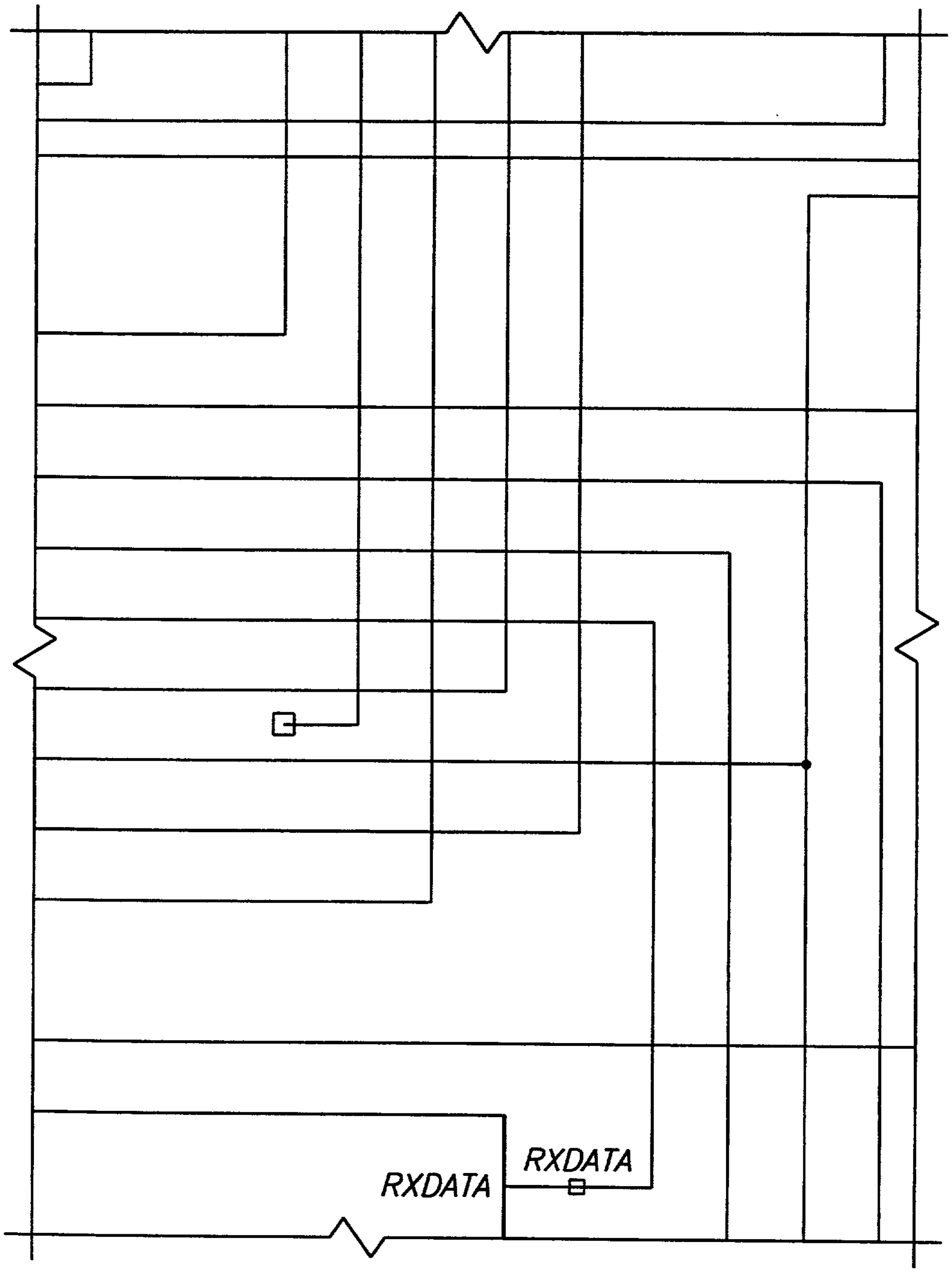


Fig 19DI

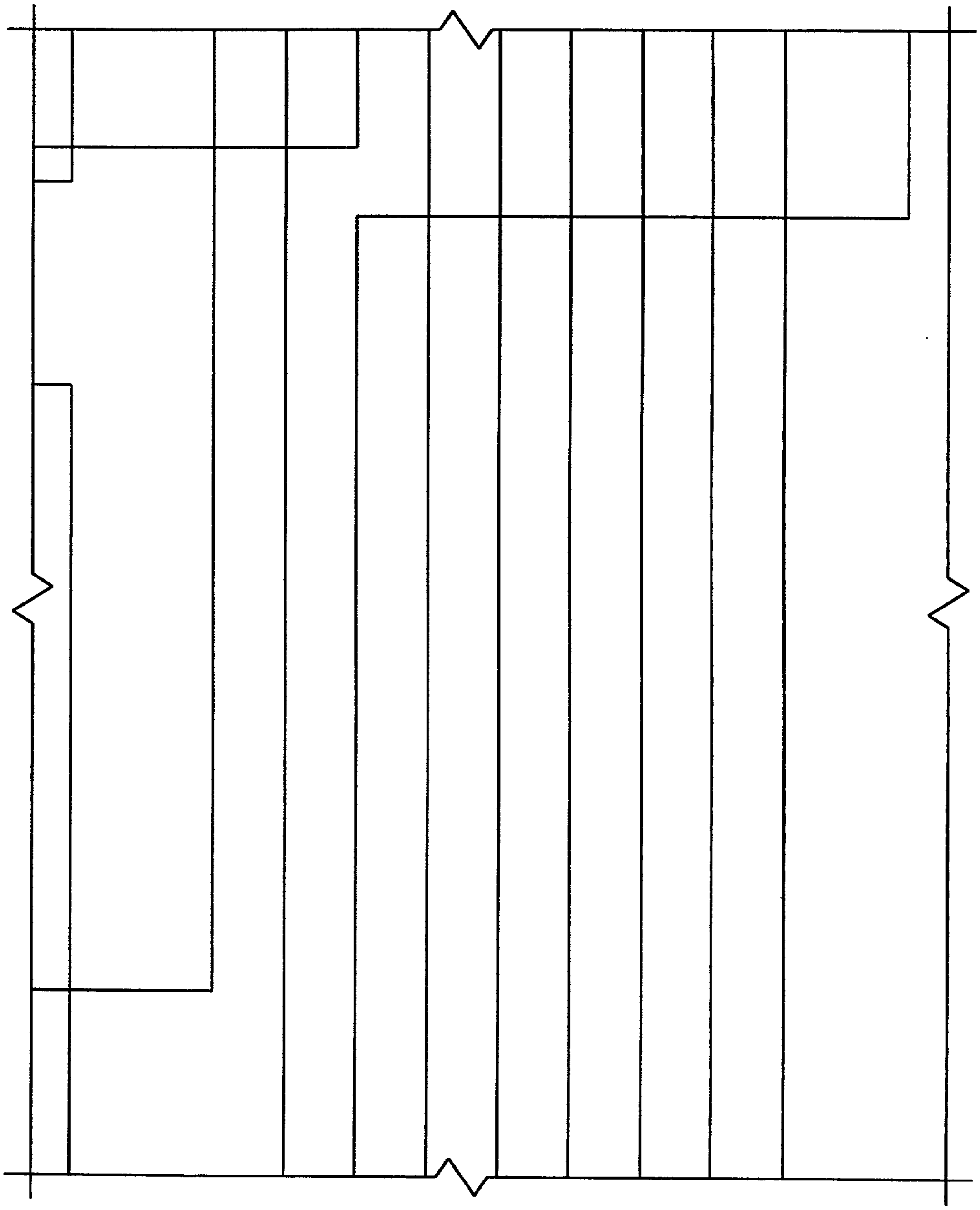


Fig 19DJ

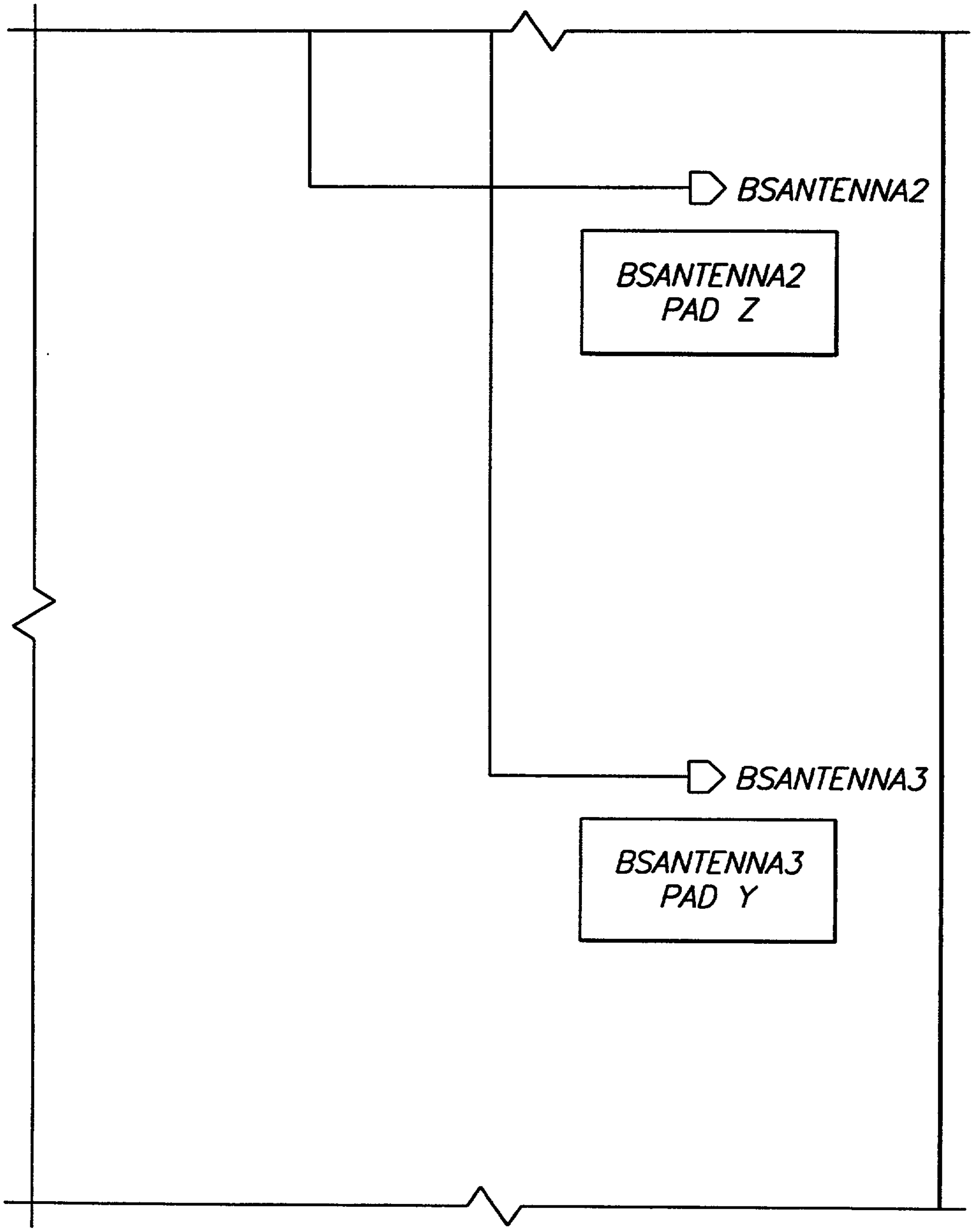


Fig 19DK

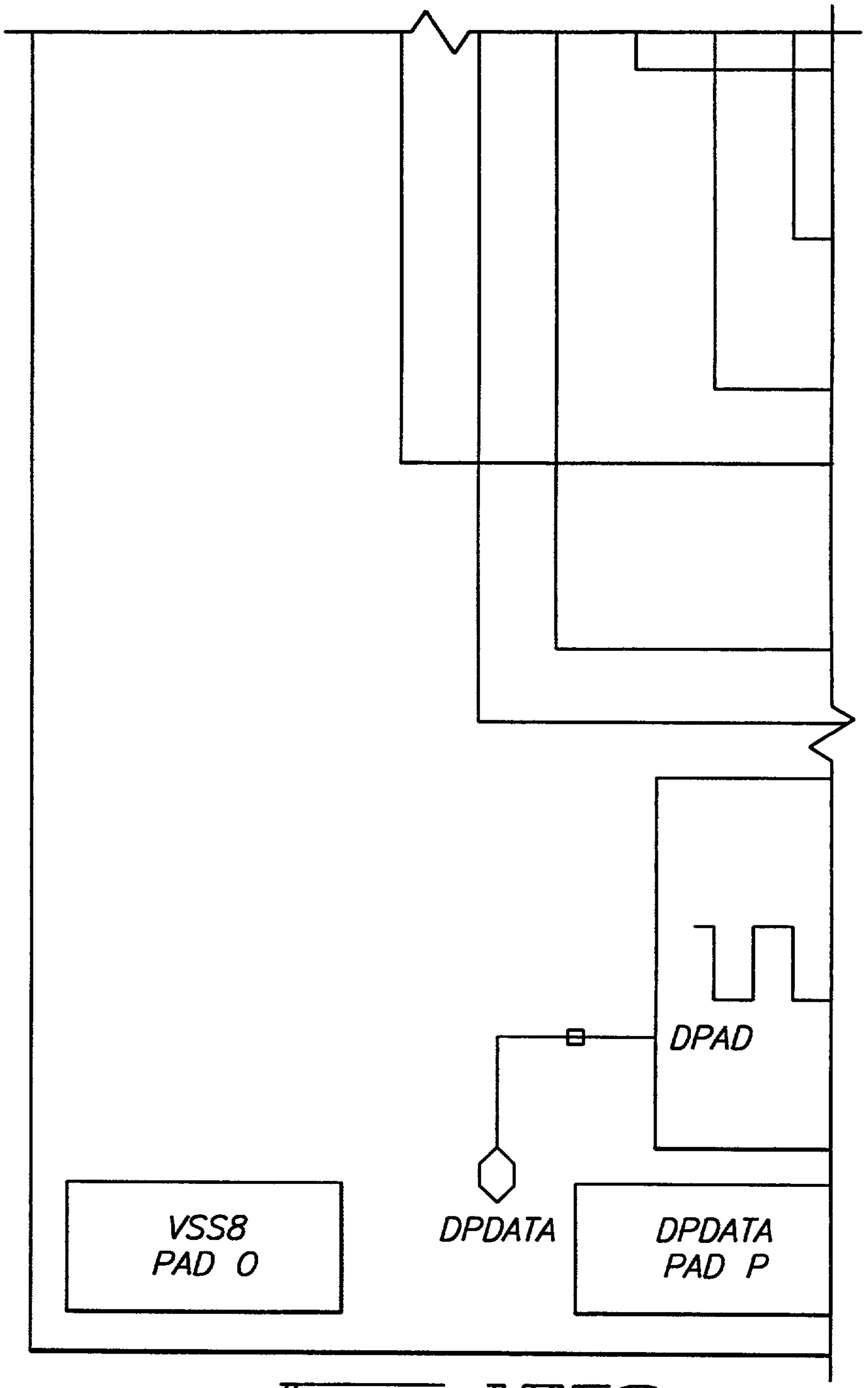


Fig 19EA

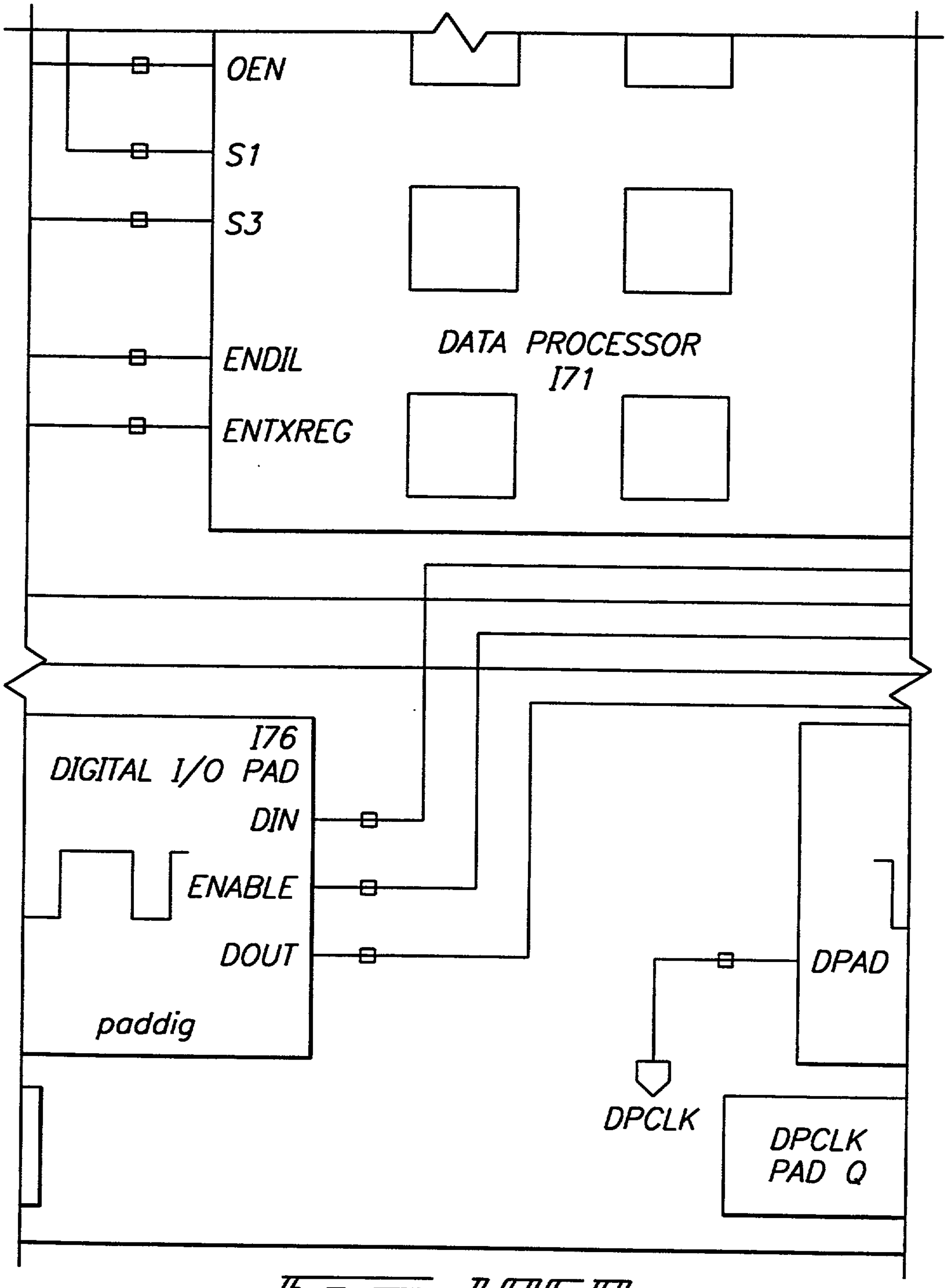

OEN
S1
S3
ENDIL
ENTXREG
DATA PROCESSOR
I71
I76
DIGITAL I/O PAD
DIN
ENABLE
DOUT
paddig
DPAD
DPCLK
DPCLK
PAD Q

Fig 19EB

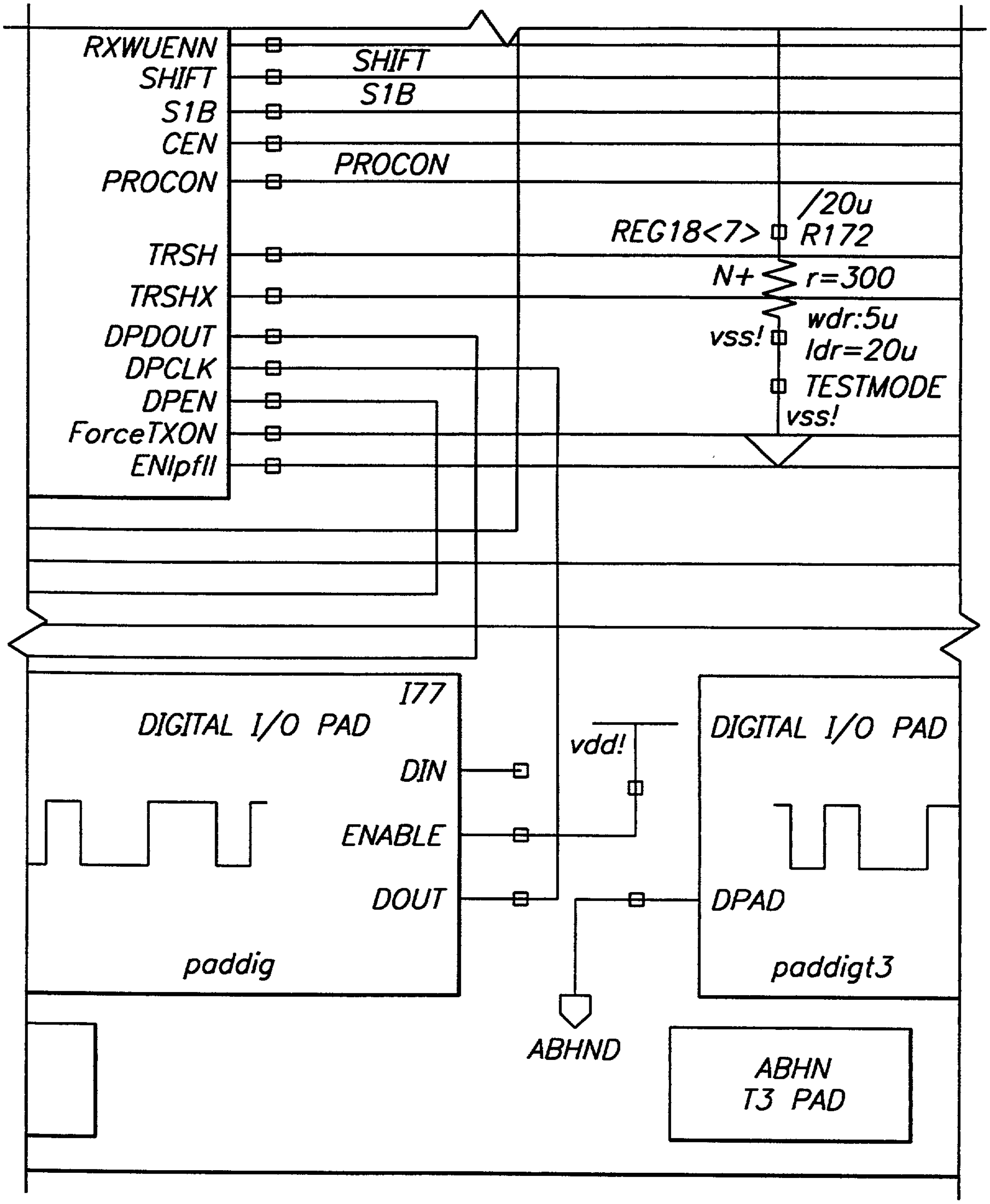

RXWUENN
SHIFT
S1B
CEN
PROCON
TRSH
TRSHX
DPDOUT
DPCLK
DPEN
ForceTXON
ENlpfll
SHIFT
S1B
PROCON
/20u
REG18<7>
R172
N+
r=300
wdr:5u
ldr=20u
vss!
TESTMODE
vss!
I77
DIGITAL I/O PAD
DIN
ENABLE
DOUT
paddig
vdd!
DIGITAL I/O PAD
DPAD
paddigt3
ABHND
ABHN
T3 PAD

Fig 19EC

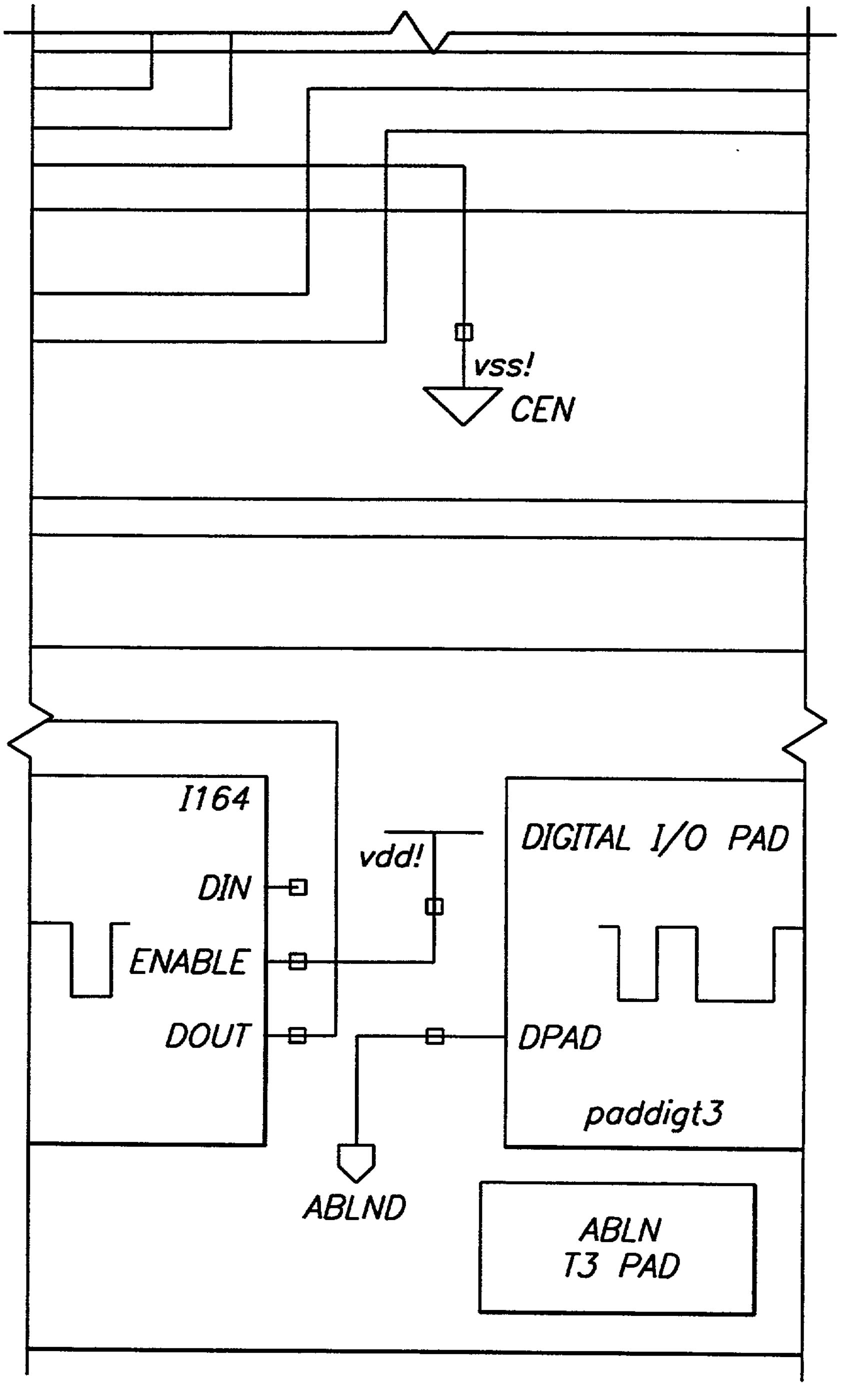

vss!
CEN
I164
DIN
ENABLE
DOUT
vdd!
DIGITAL I/O PAD
DPAD
paddigt3
ABLND
ABLN
T3 PAD

Fig 19ED

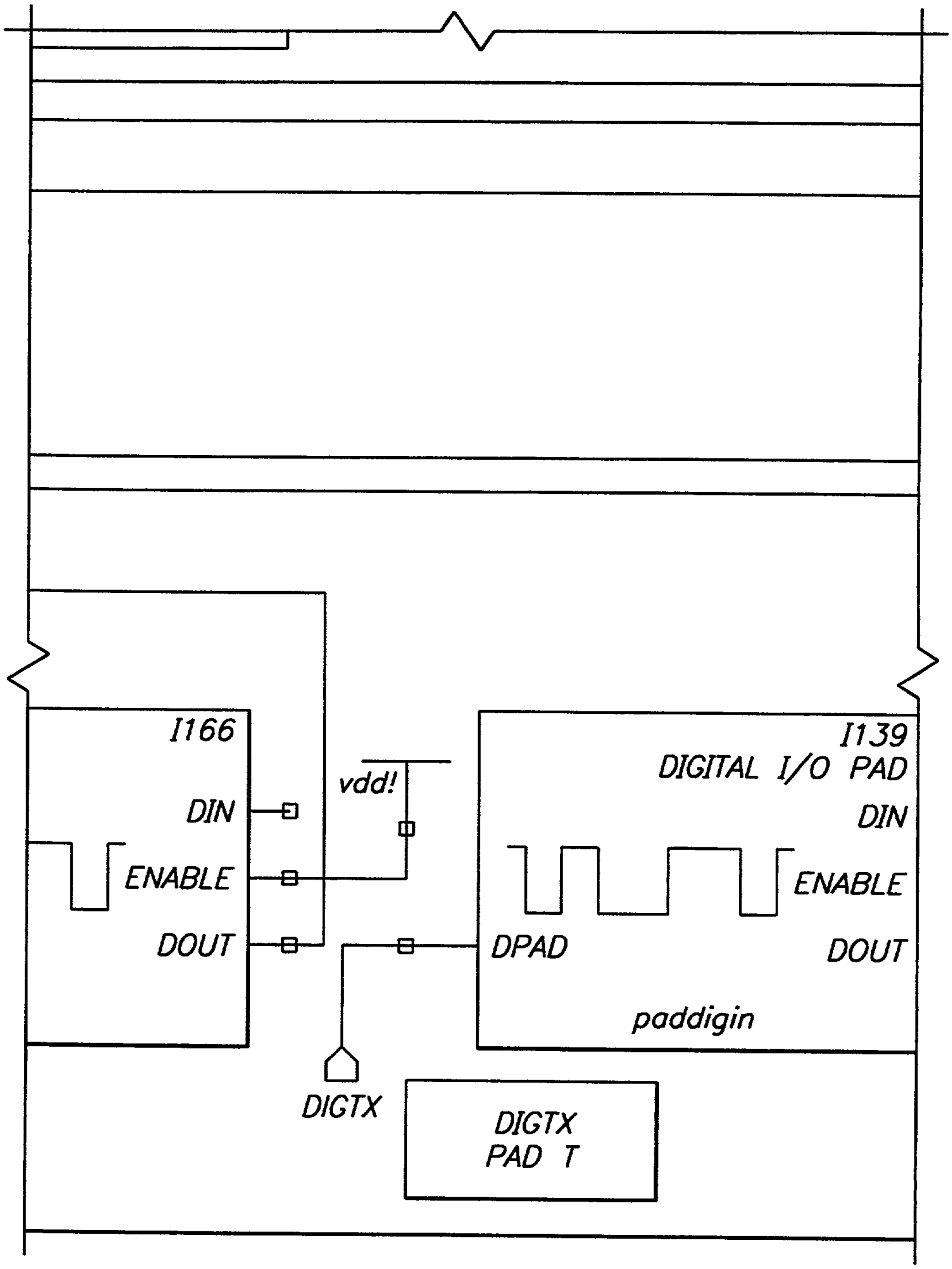

I166
DIN
ENABLE
DOUT
vdd!
I139
DIGITAL I/O PAD
DIN
ENABLE
DPAD
DOUT
paddigin
DIGTX
DIGTX
PAD T

Fig 19EE

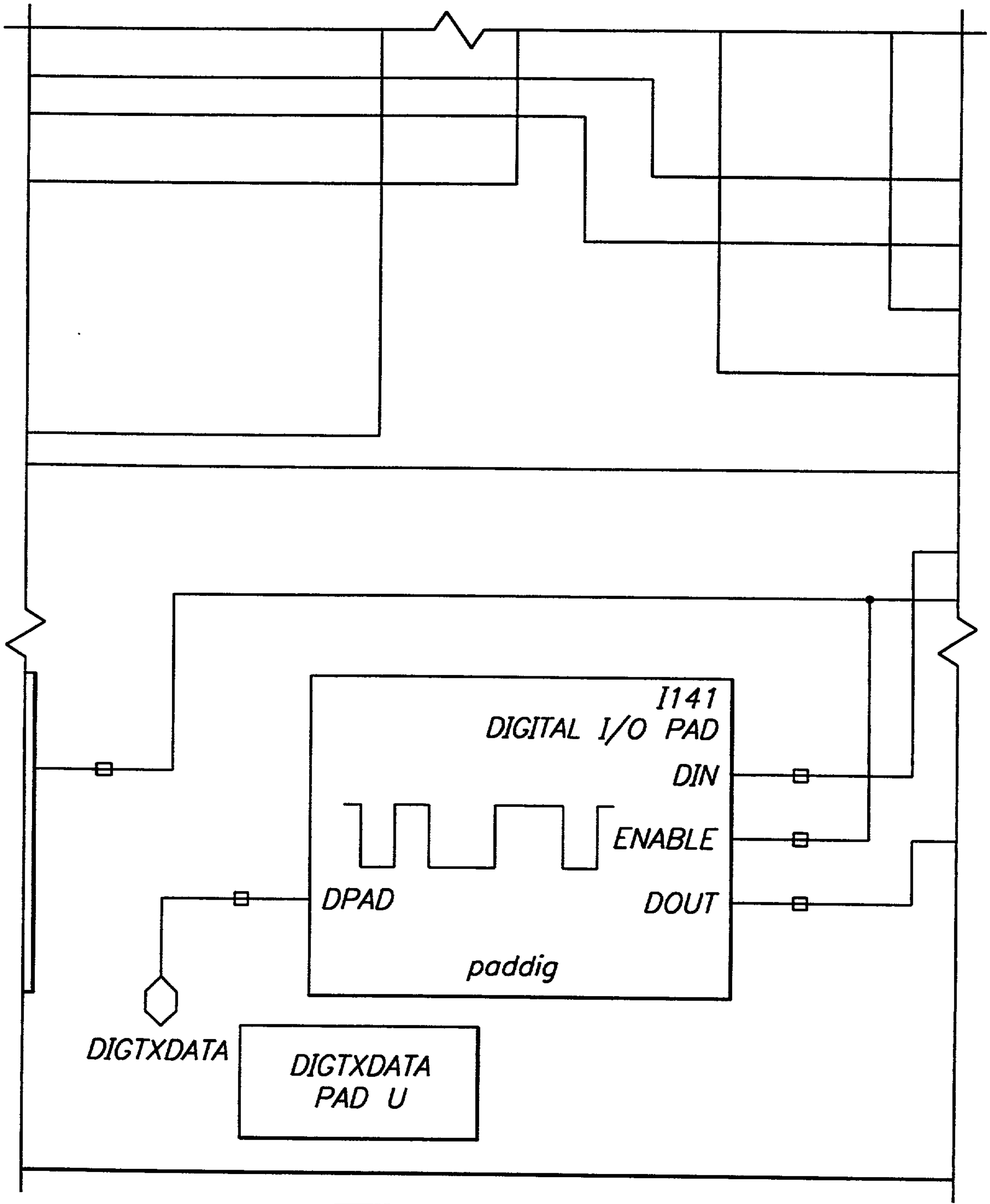

I141
DIGITAL I/O PAD
DIN
ENABLE
DOUT
DPAD
paddig
DIGTXDATA
DIGTXDATA
PAD U

Fig. 19EF

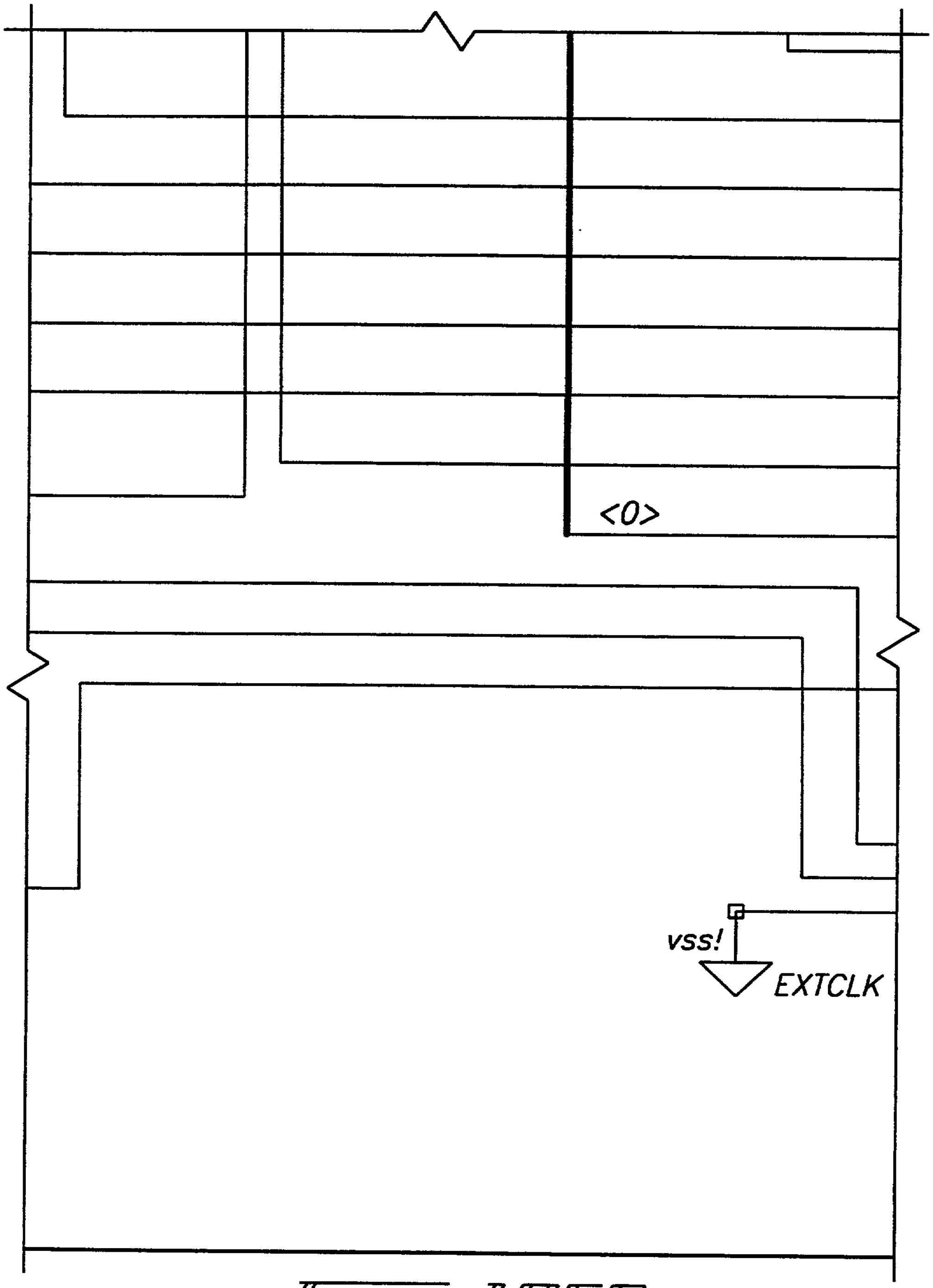


Fig 19EG

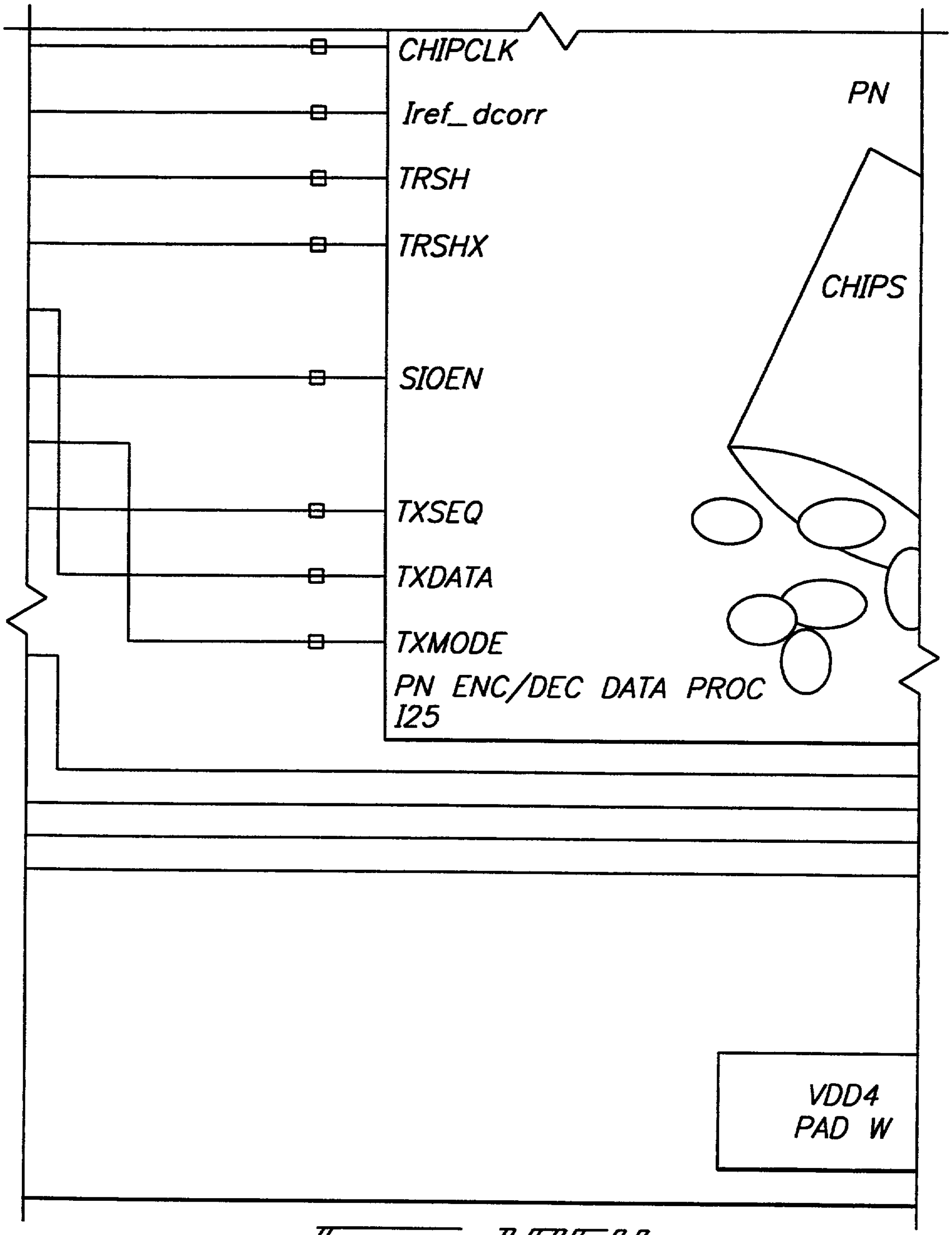

CHIPCLK
Iref_dcorr
TRSH
TRSHX
SIOEN
TXSEQ
TXDATA
TXMODE
PN ENC/DEC DATA PROC
I25
PN
CHIPS
VDD4
PAD W

Fig 19EH

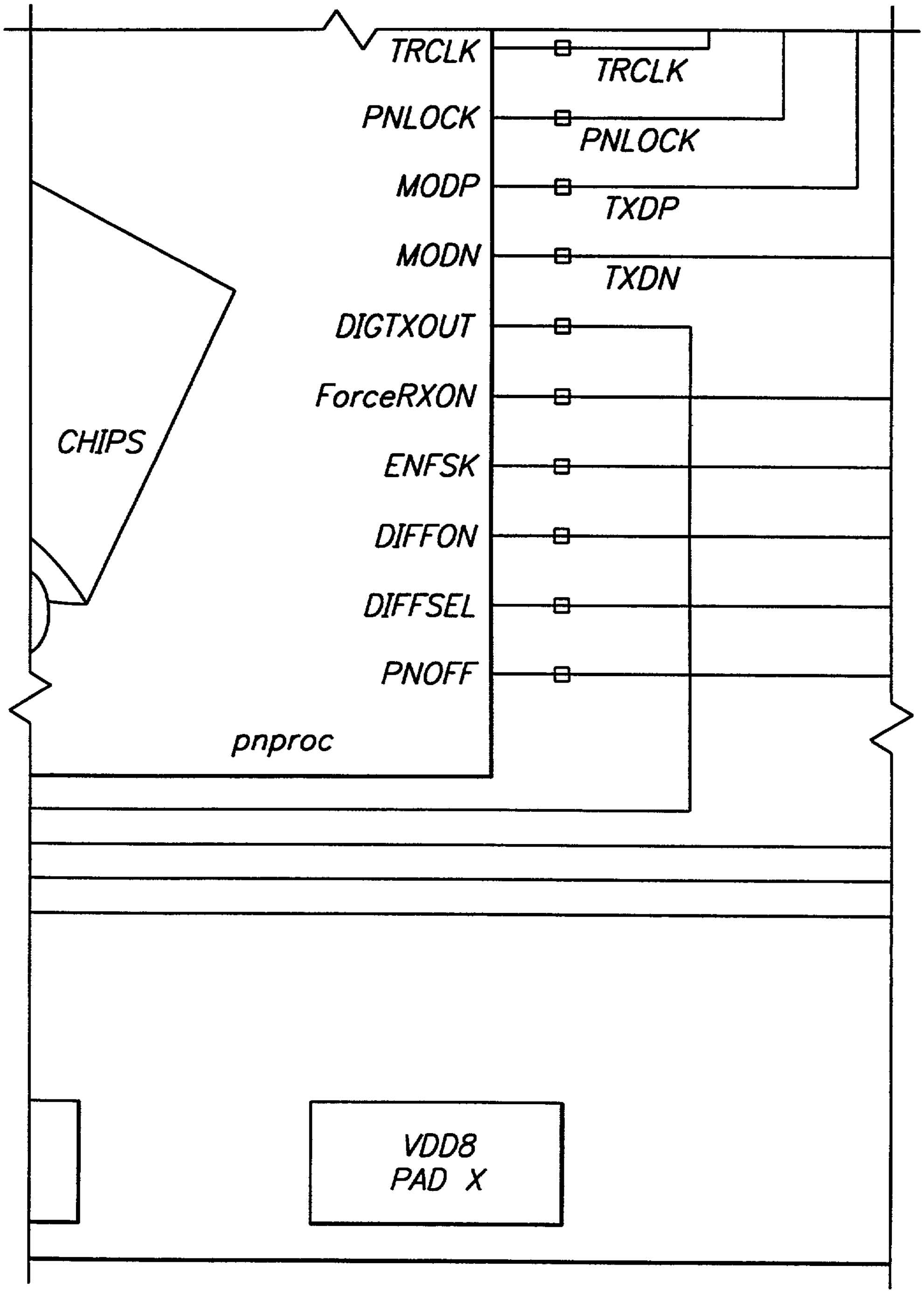

TRCLK
PNLOCK
MODP
MODN
DIGTXOUT
ForceRXON
ENFSK
DIFFON
DIFFSEL
PNOFF
TRCLK
PNLOCK
TXDP
TXDN
CHIPS
pnproc
VDD8
PAD X

Fig 19EI

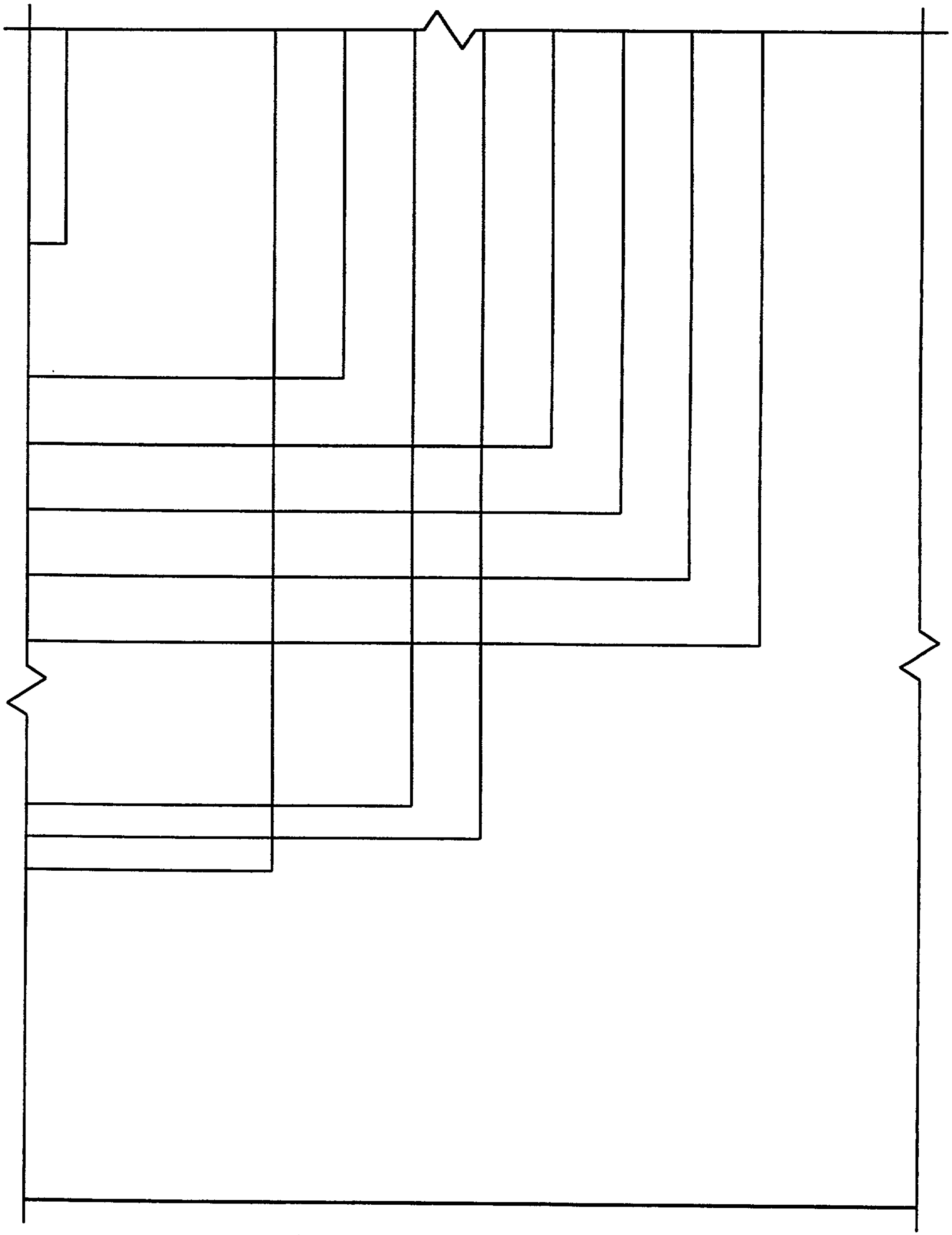


Fig 19Ed

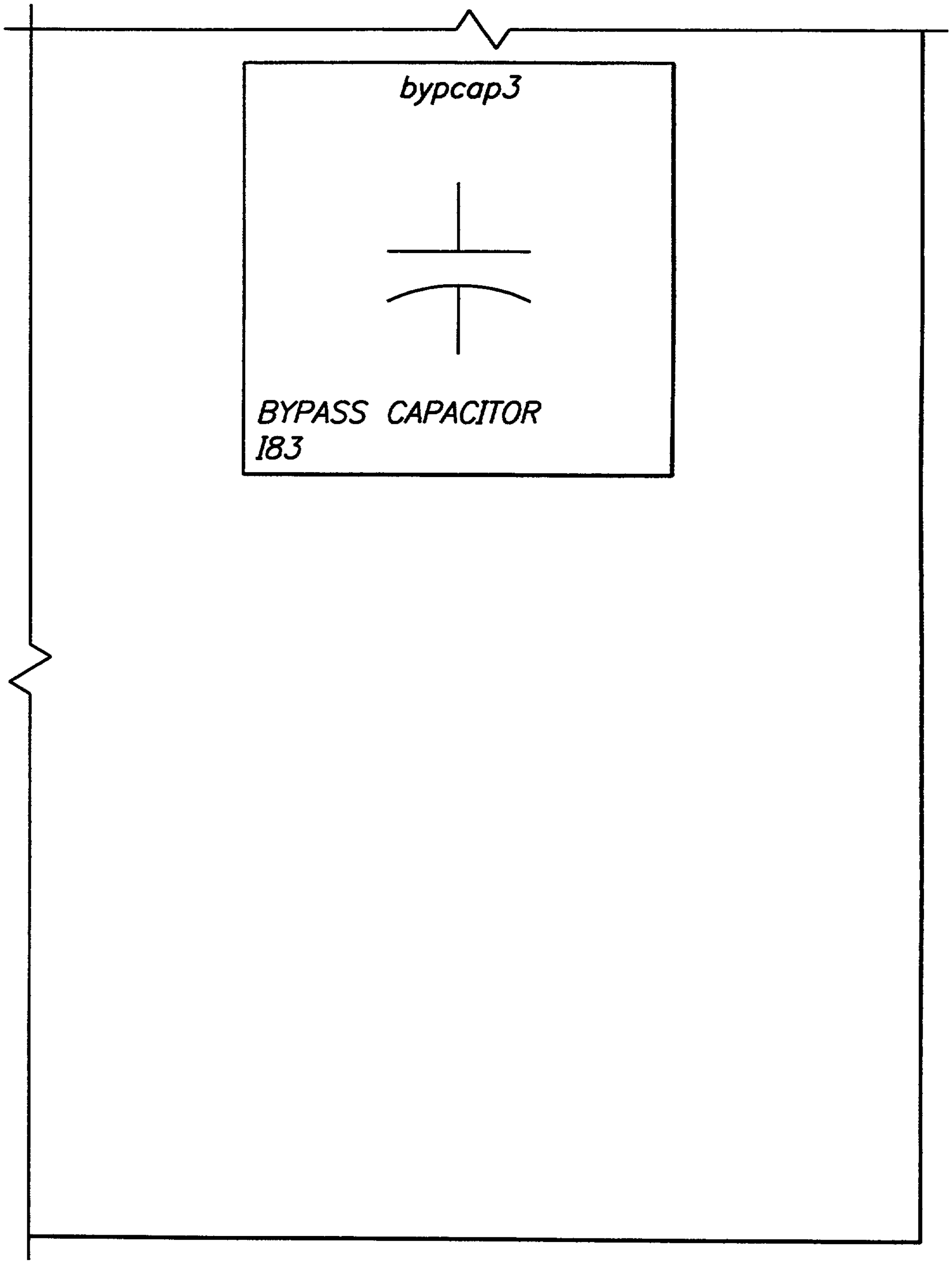


Fig 19EK

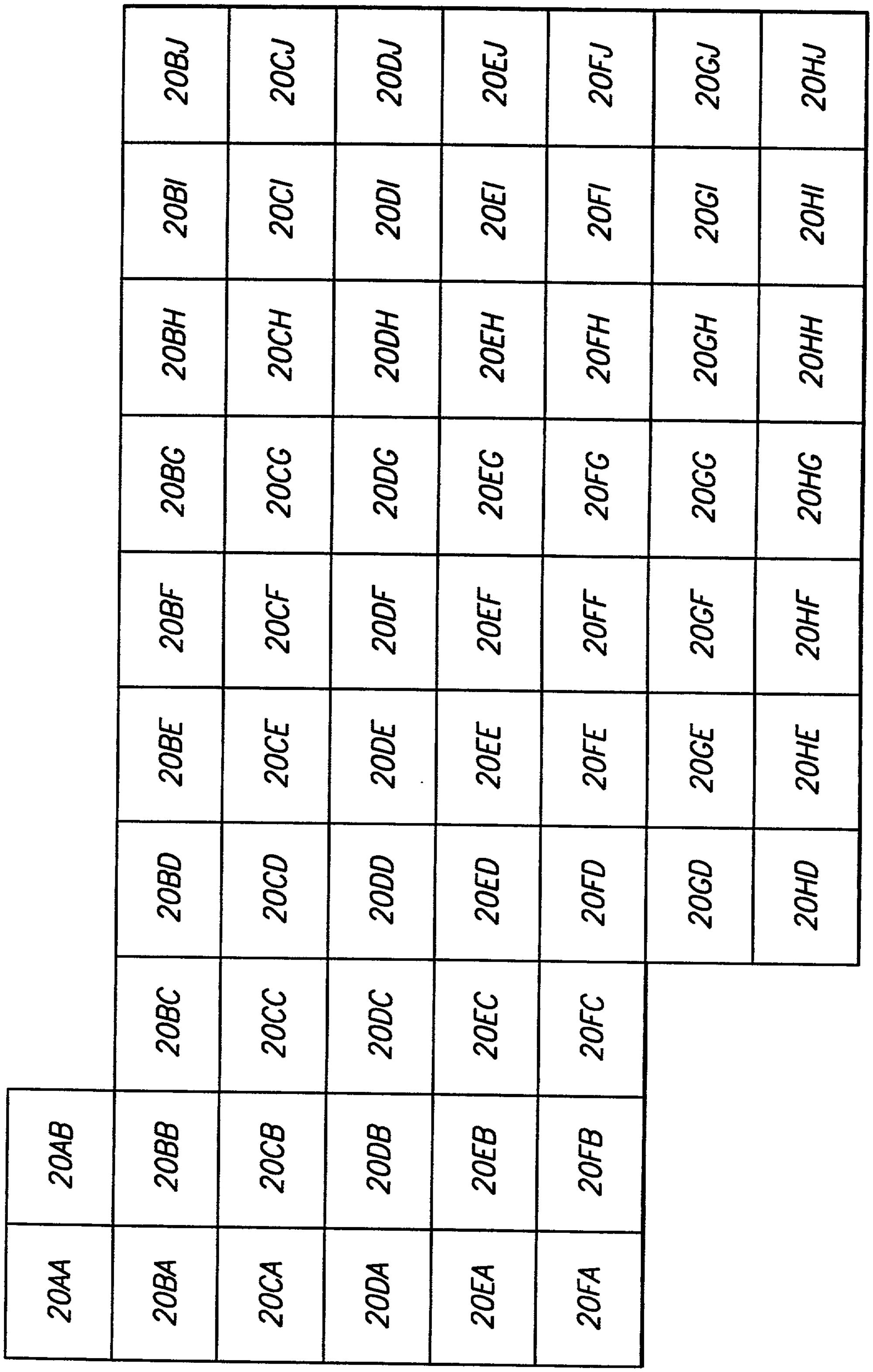

20AA
20AB
20BA
20BB
20BC
20BD
20BE
20BF
20BG
20BH
20BI
20BJ
20CA
20CB
20CC
20CD
20CE
20CF
20CG
20CH
20CI
20CJ
20DA
20DB
20DC
20DD
20DE
20DF
20DG
20DH
20DI
20DJ
20EA
20EB
20EC
20ED
20EE
20EF
20EG
20EH
20EI
20EJ
20FA
20FB
20FC
20FD
20FE
20FF
20FG
20FH
20FI
20FJ
20GD
20GE
20GF
20GG
20GH
20GI
20GJ
20HD
20HE
20HF
20HG
20HH
20HI
20HJ

Fig 20

3148/3273

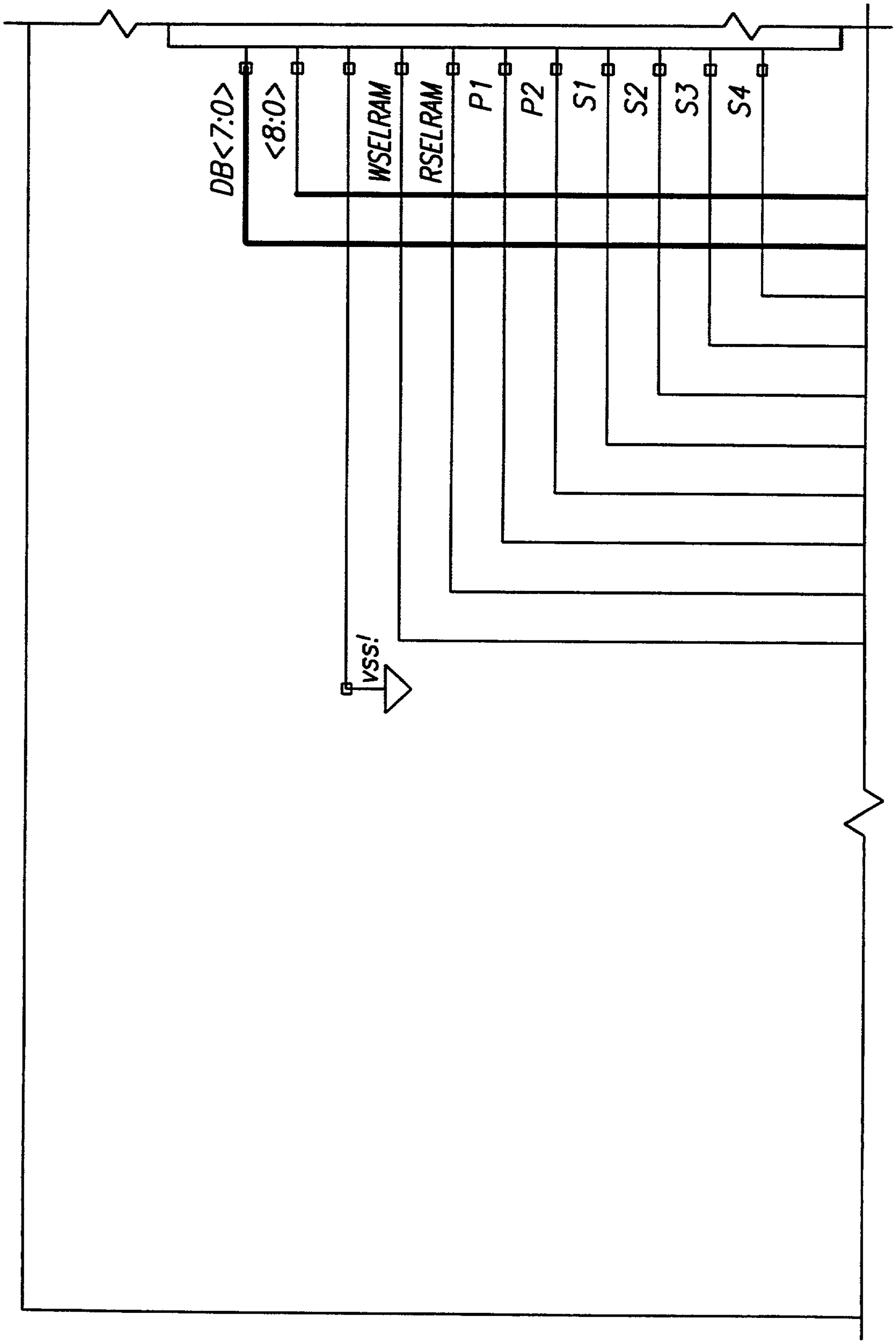


Fig 20AA

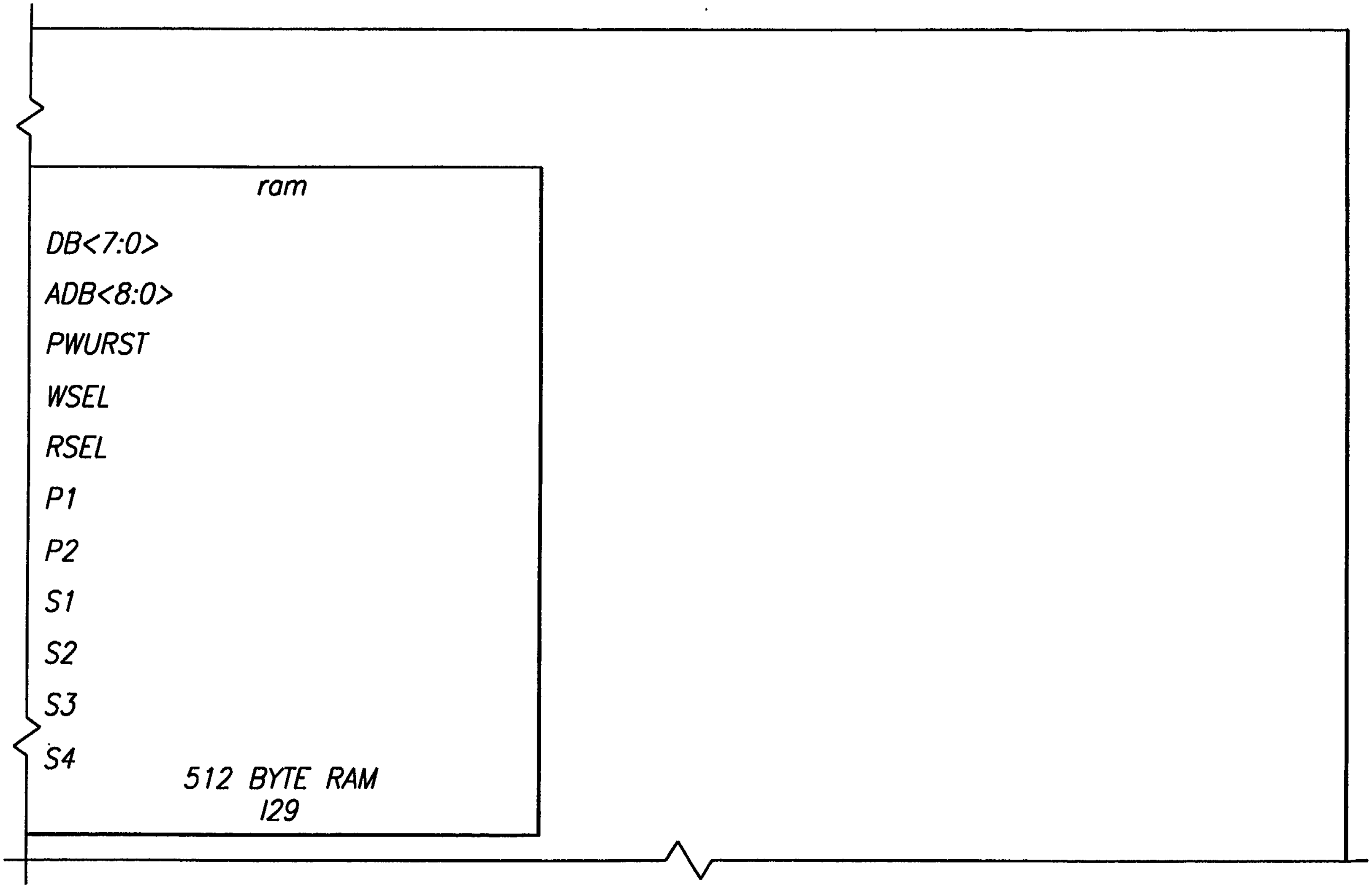

ram
DB<7:0>
ADB<8:0>
PWURST
WSEL
RSEL
P1
P2
S1
S2
S3
S4
512 BYTE RAM
129

Fig 20AB

3150/3273

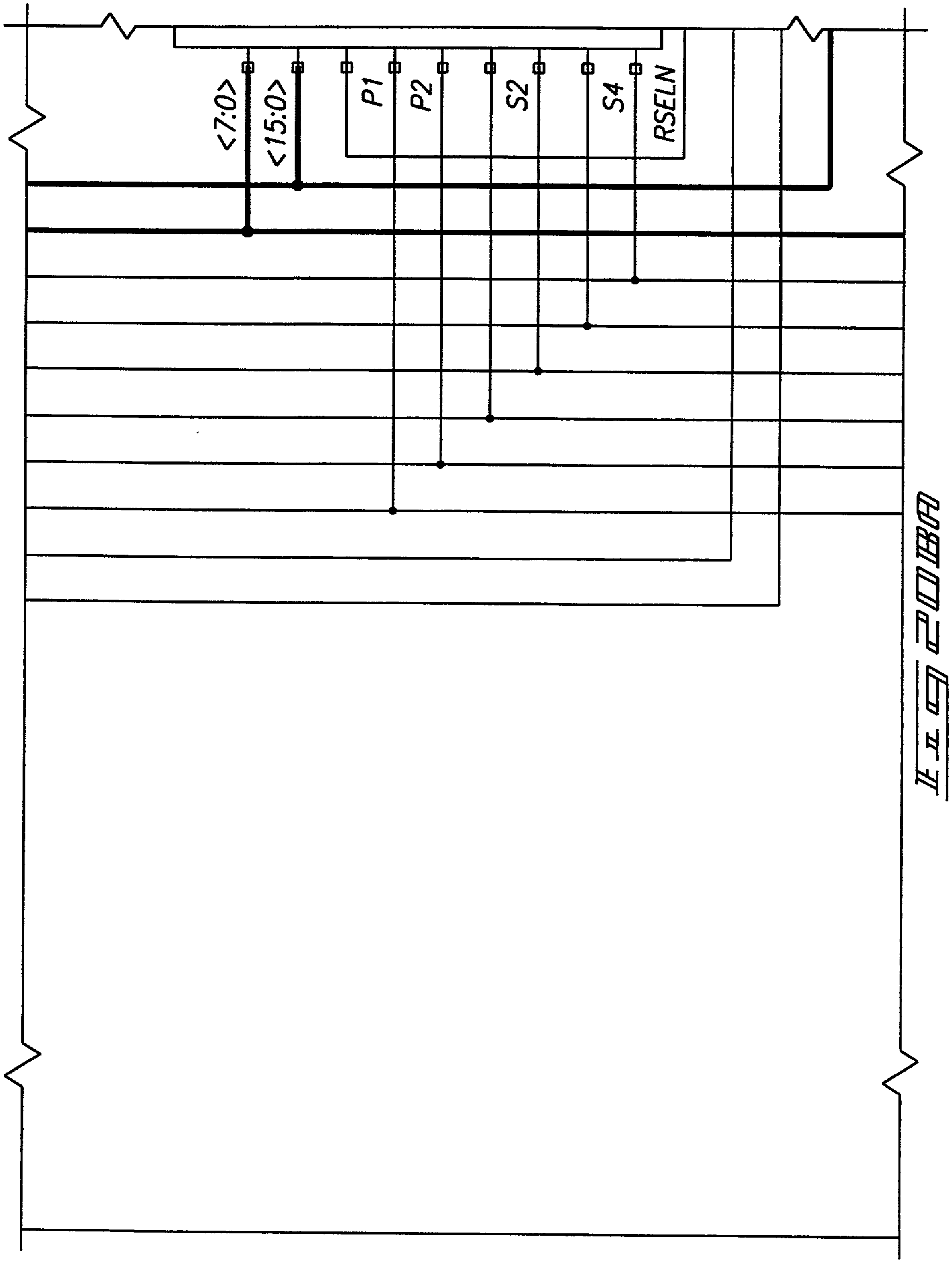


Fig 20BA

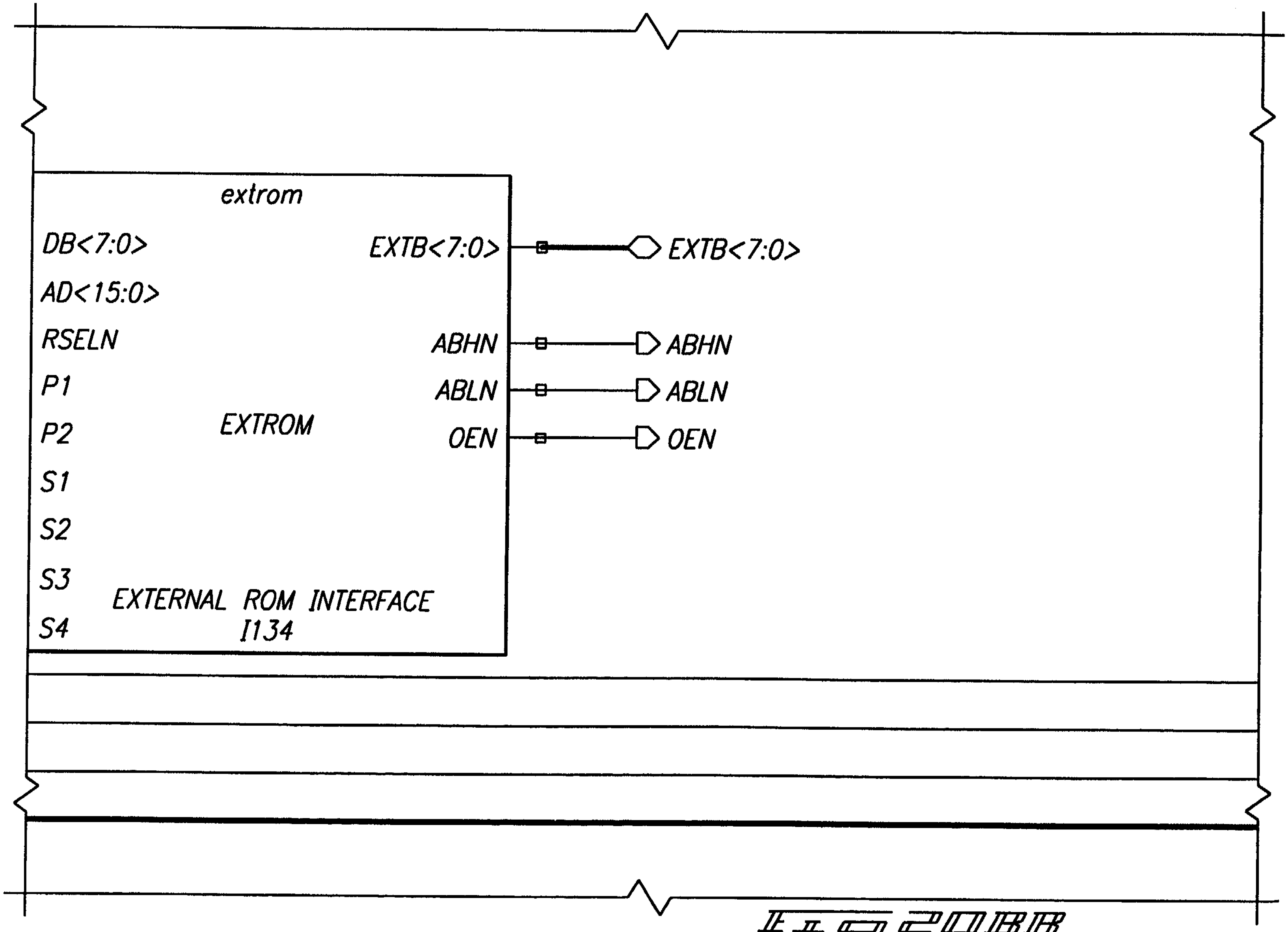

extrom
DB<7:0>
AD<15:0>
RSELN
P1
P2
S1
S2
S3
S4
EXTROM
EXTERNAL ROM INTERFACE
I134
EXTB<7:0>
ABHN
ABLN
OEN
EXTB<7:0>
ABHN
ABLN
OEN

FIG. 20BB

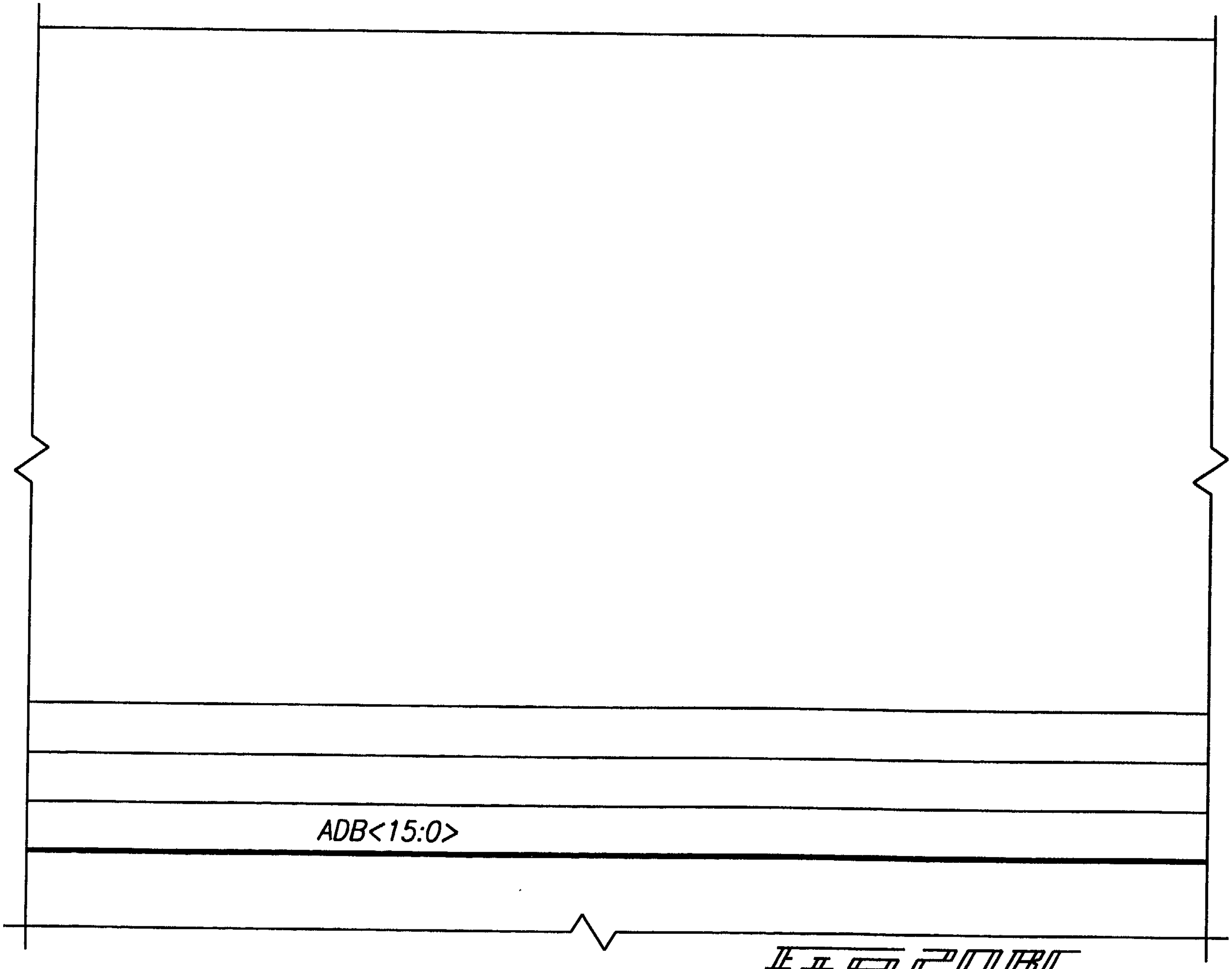


FIG 20BC

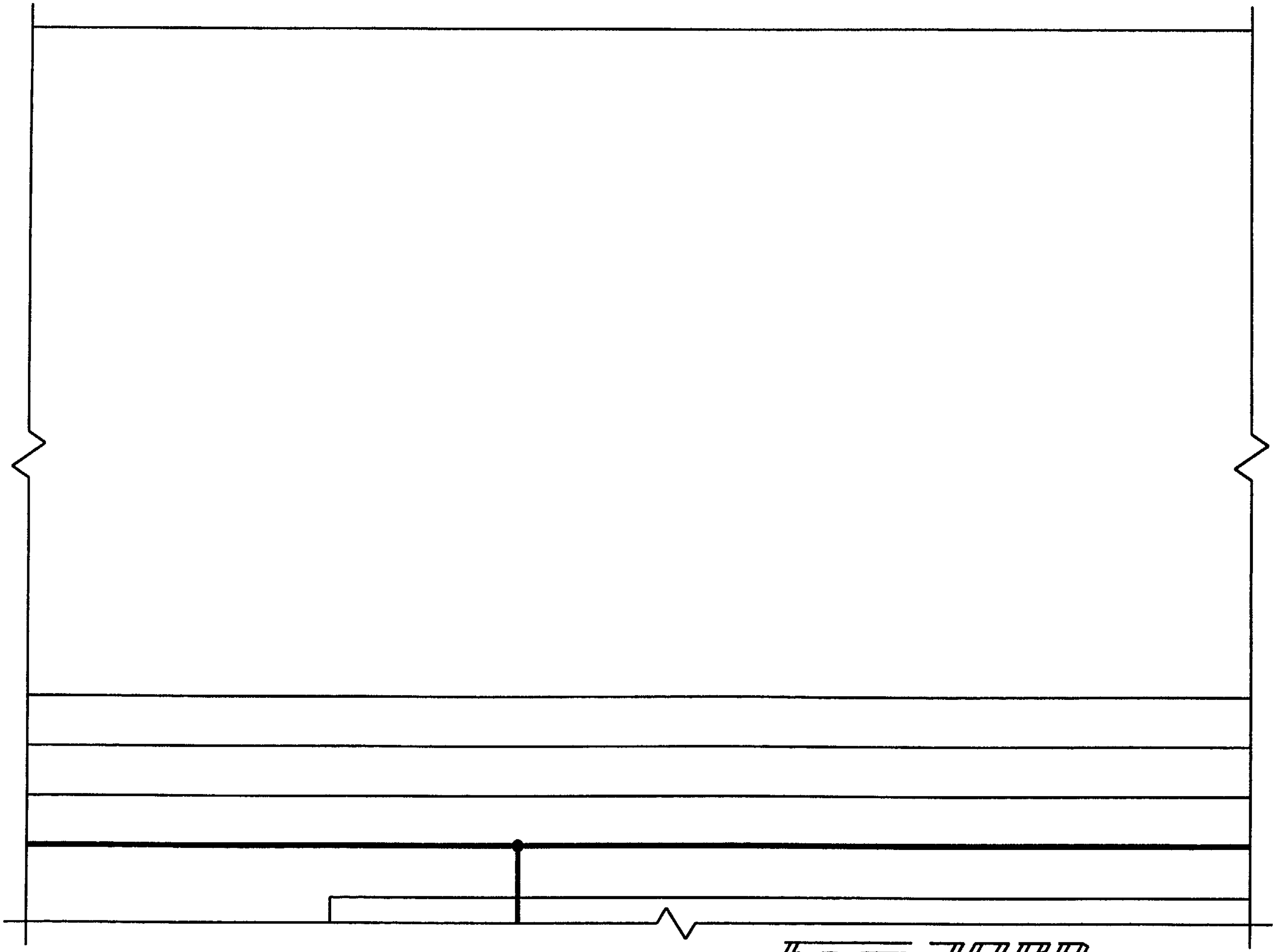


FIG. 20BD

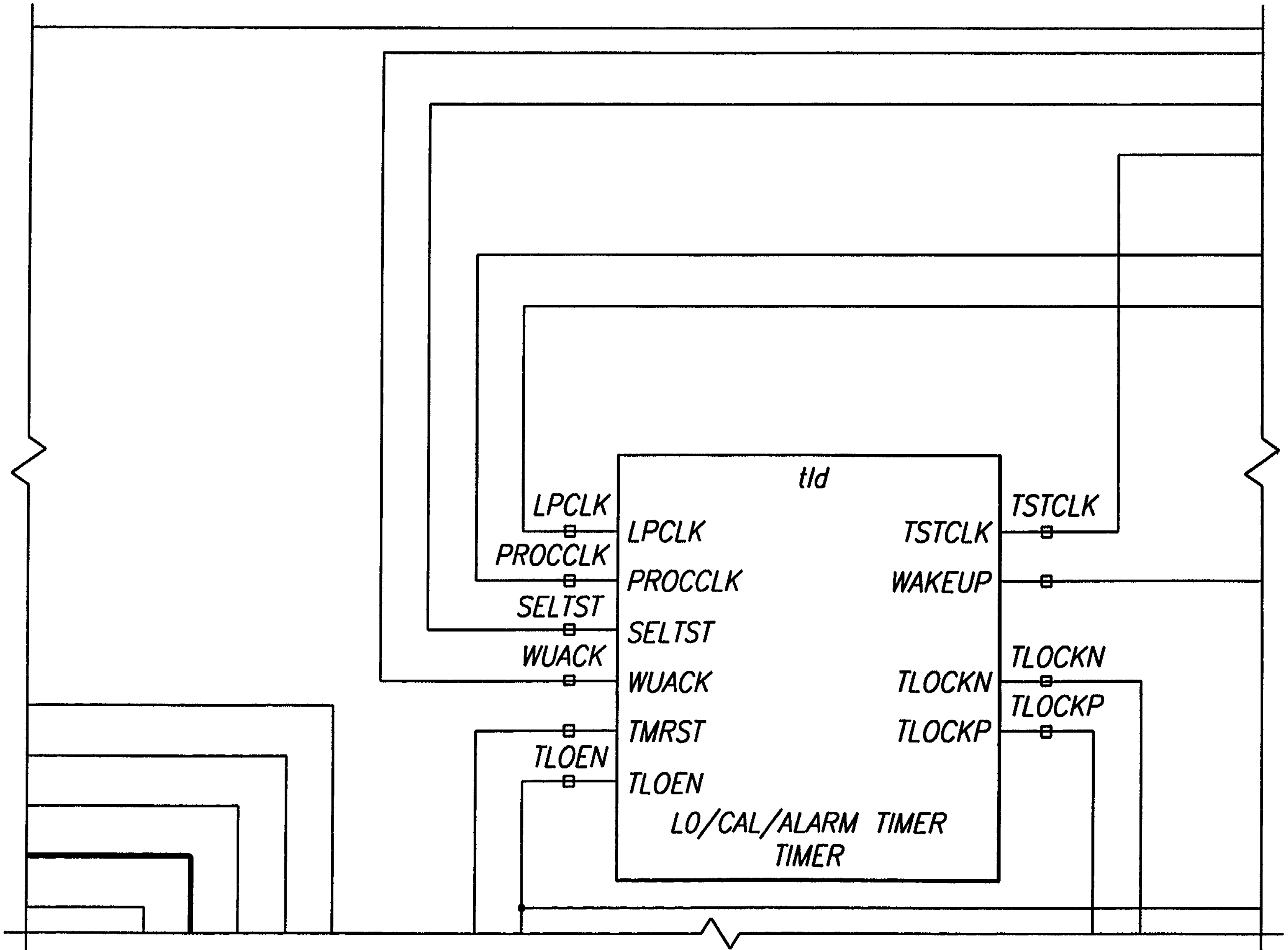

tld
LPCLK
LPCLK
PROCCLK
PROCCLK
SELTST
SELTST
WUACK
WUACK
TMRST
TLOEN
TLOEN
LO/CAL/ALARM TIMER
TIMER
TSTCLK
TSTCLK
WAKEUP
TLOCKN
TLOCKN
TLOCKP
TLOCKP

Fig 20BE

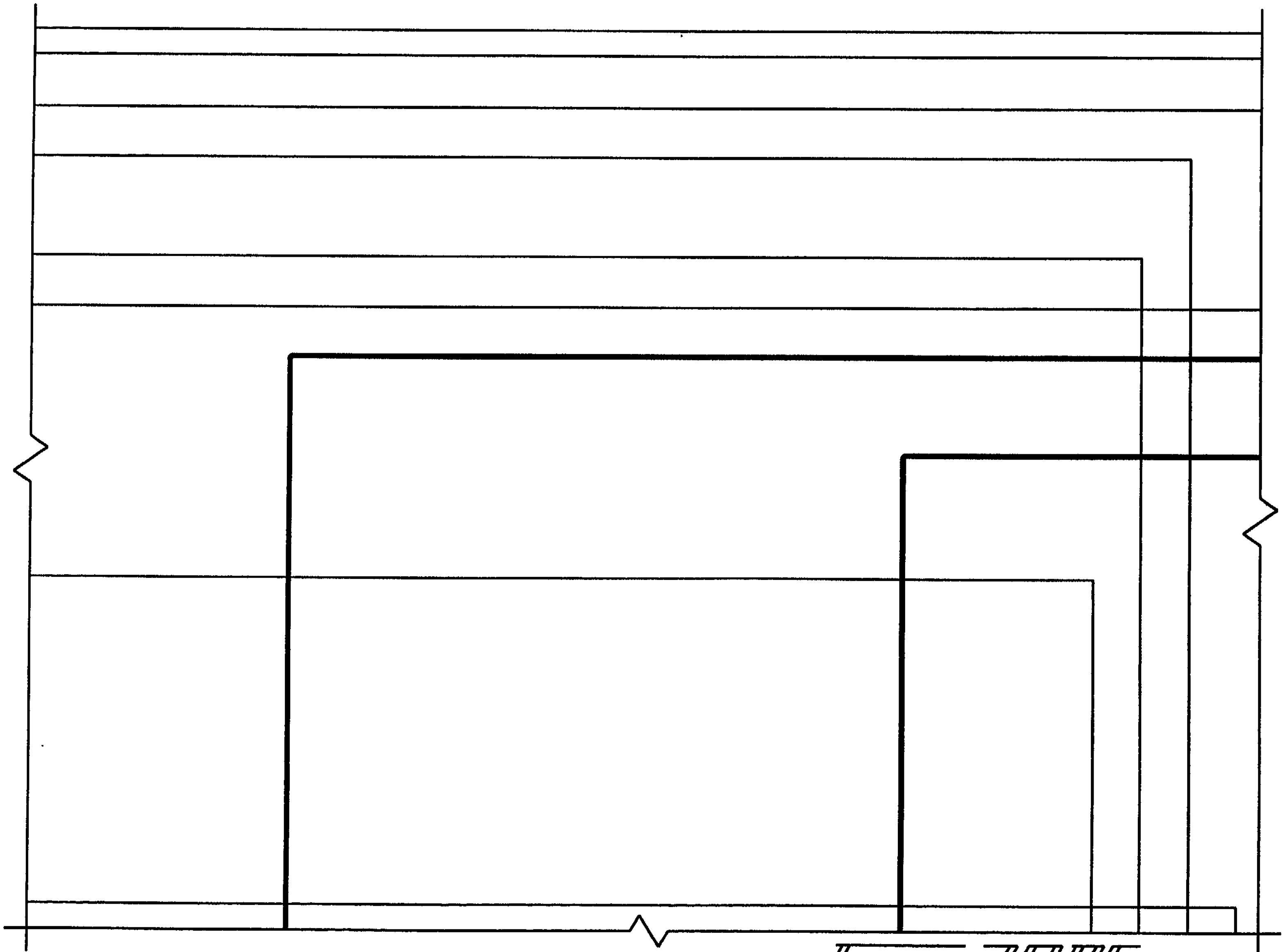


Fig 20BF

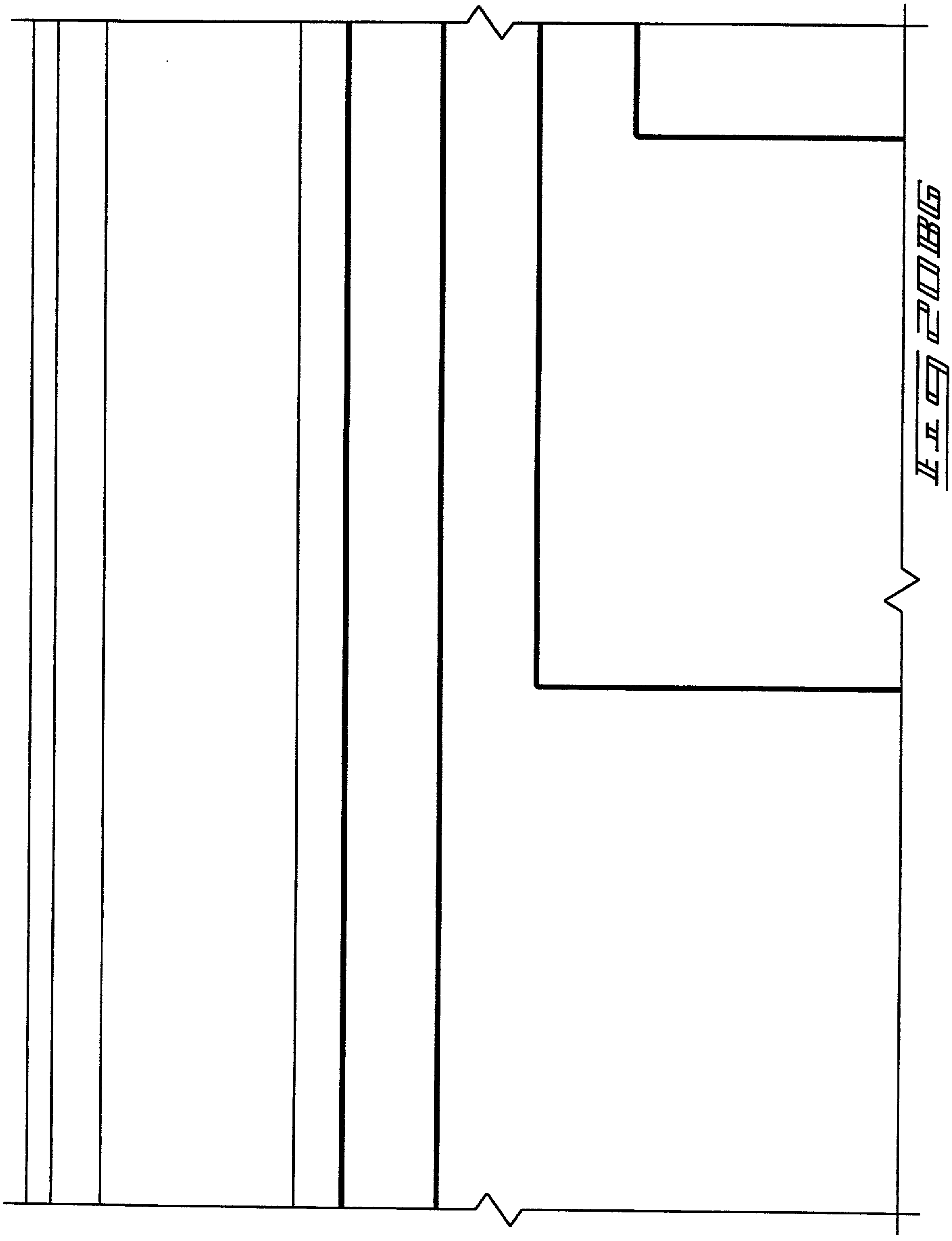


FIG. 20BG

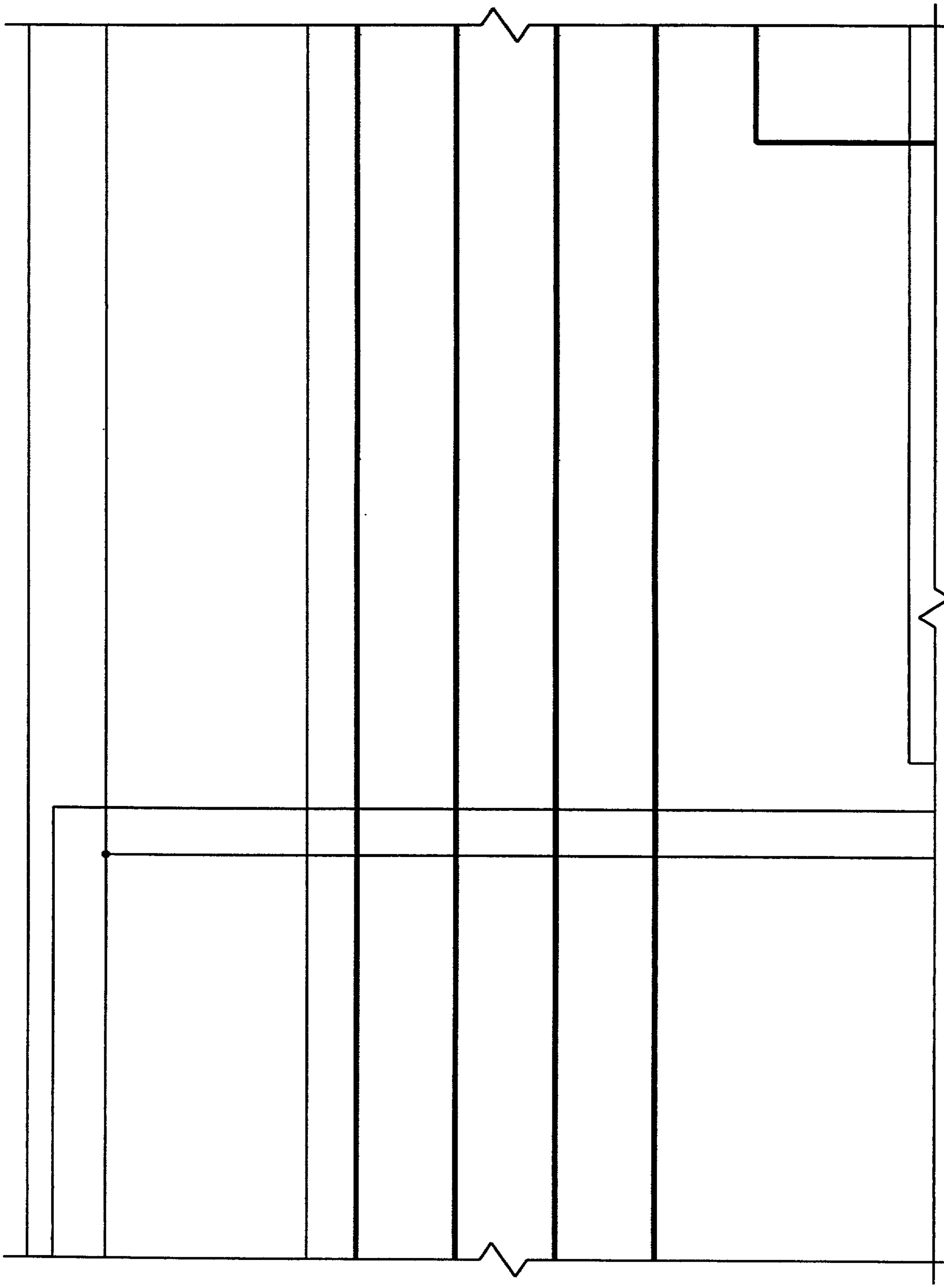


Fig 20BH

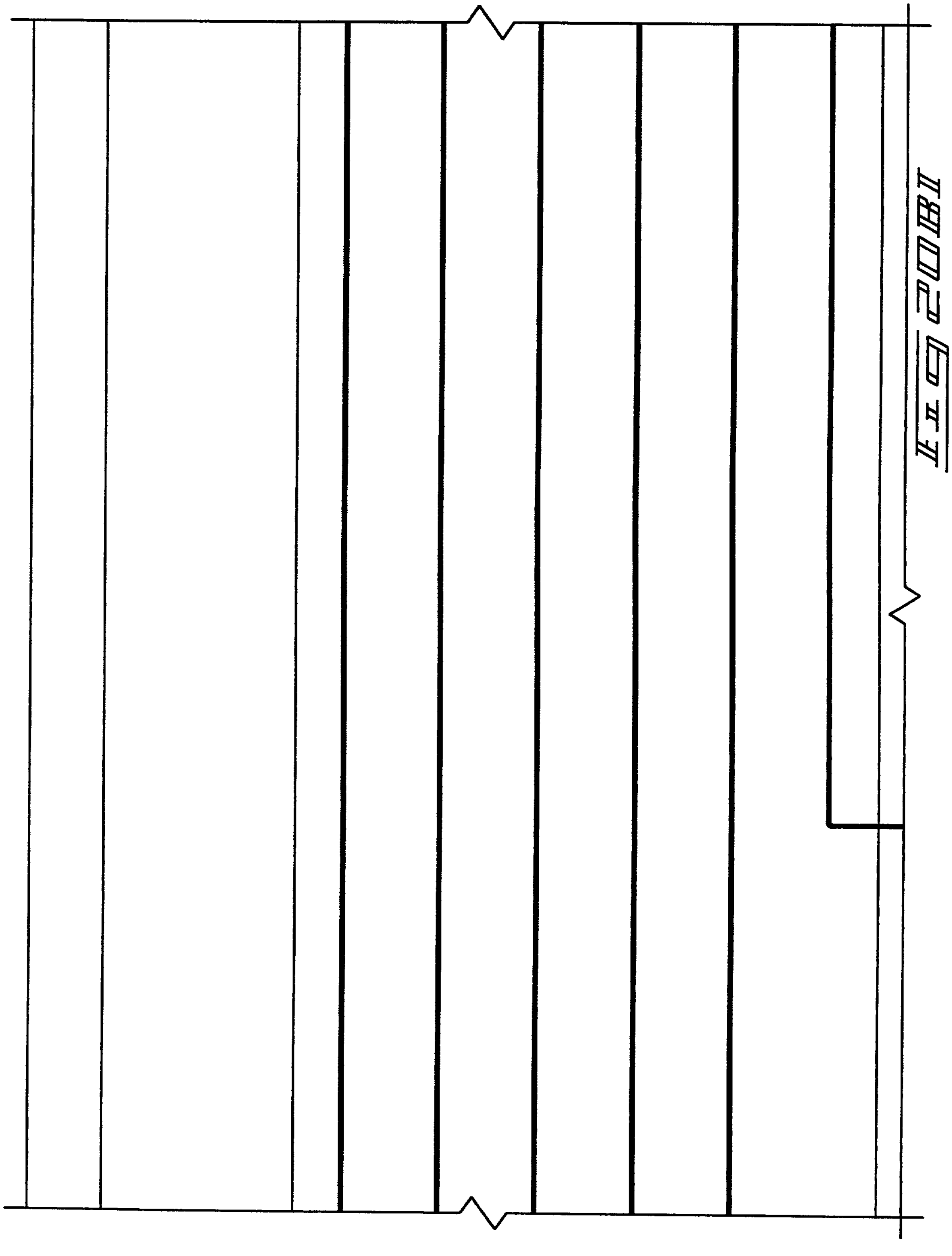


Fig 20BI

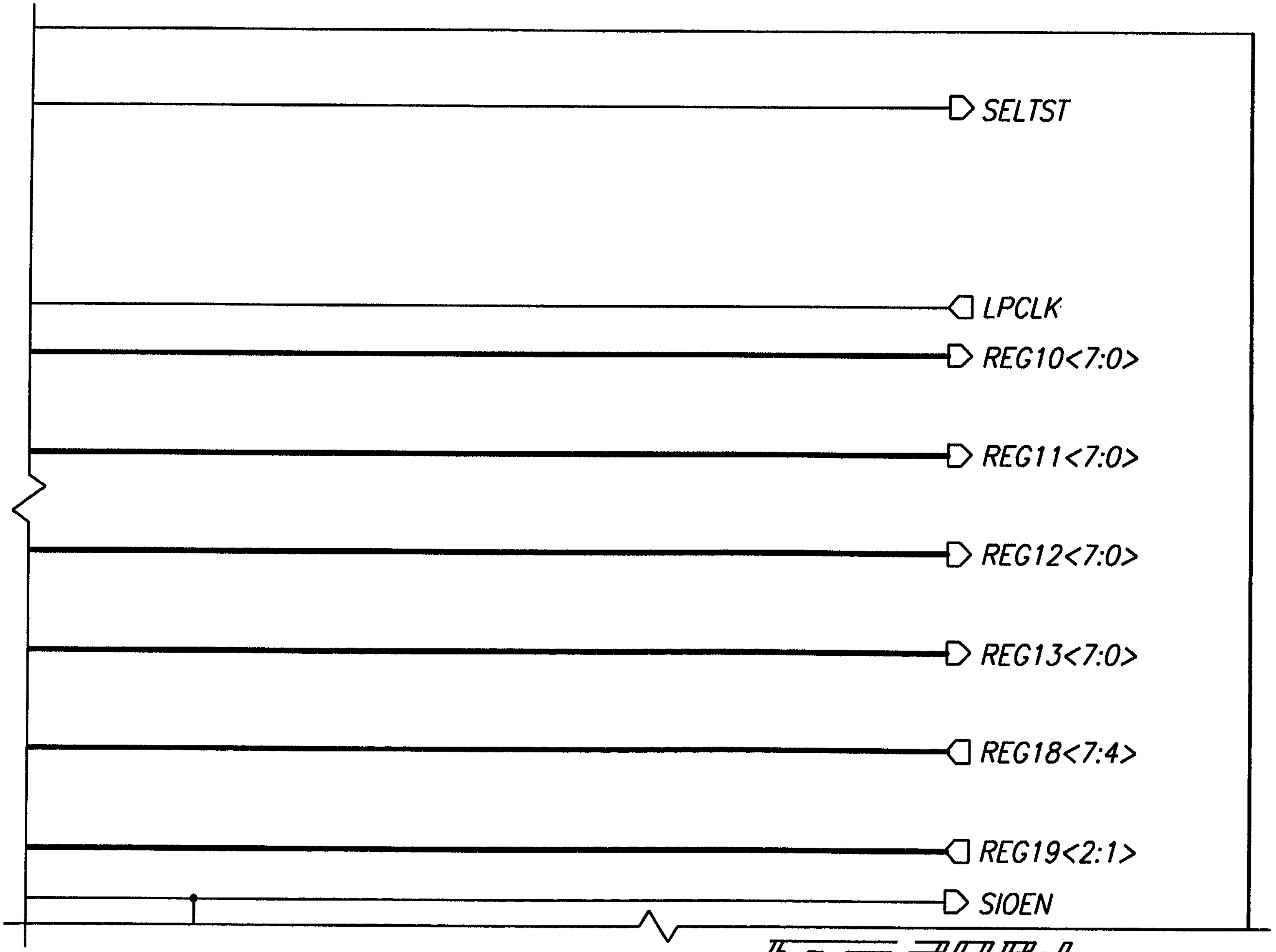

SELTST
LPCLK
REG10<7:0>
REG11<7:0>
REG12<7:0>
REG13<7:0>
REG18<7:4>
REG19<2:1>
SIOEN

Fig 20Bd

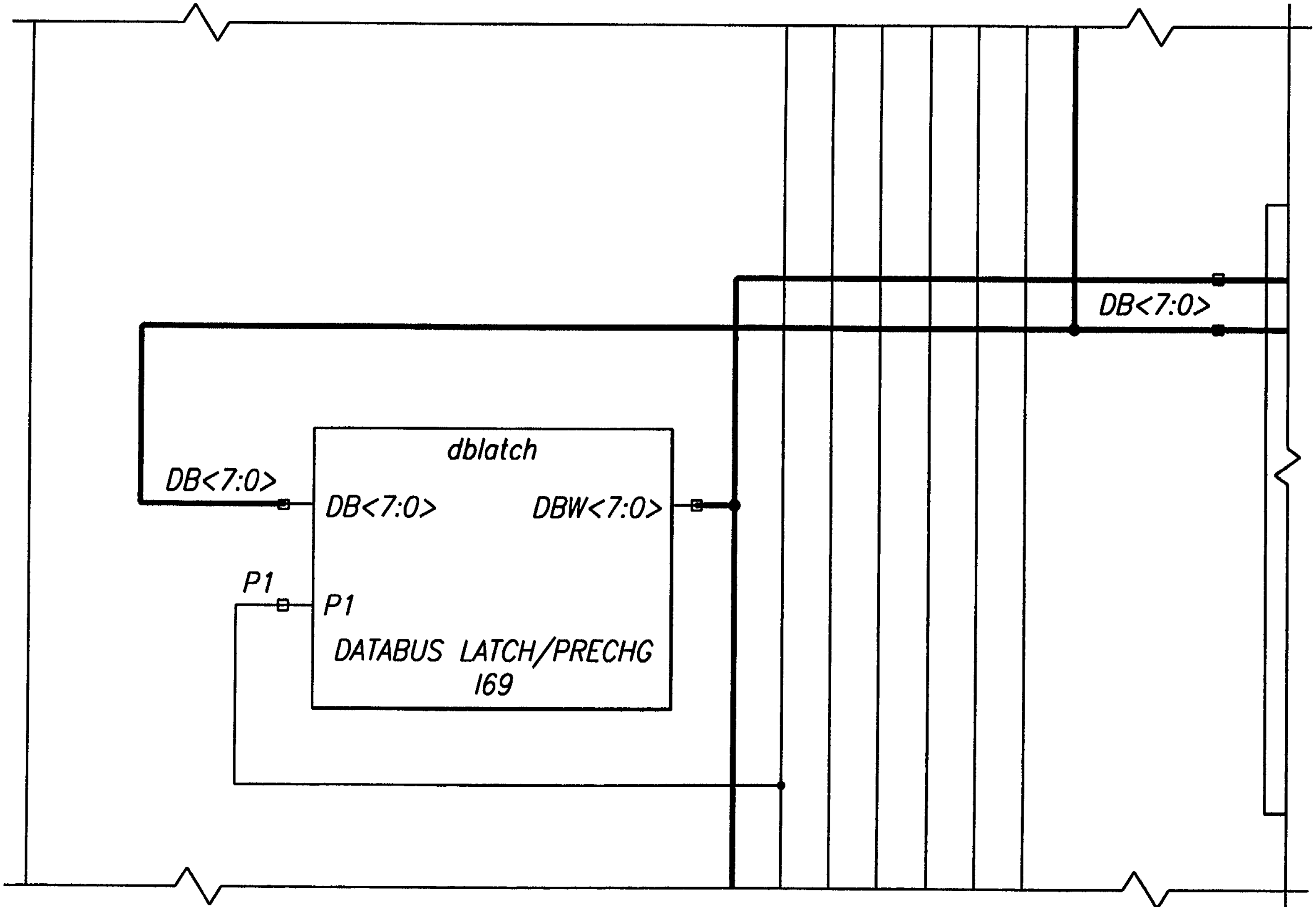


Fig 20CA

3160/3273

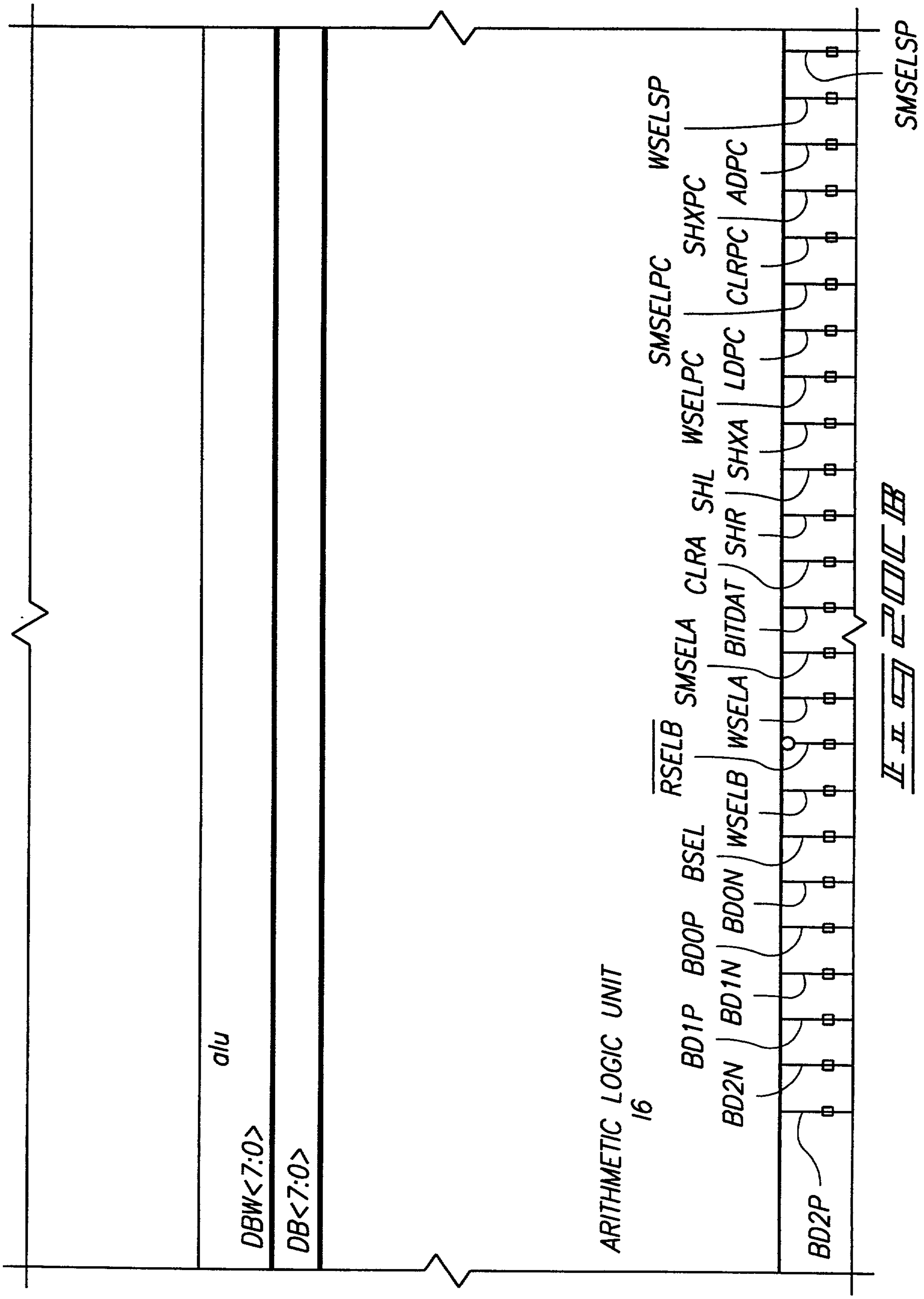

alu
DBW<7:0>
DB<7:0>
ARITHMETIC LOGIC UNIT
16
BD2P
BD2N
BD1P
BD1N
BD0P
BD0N
BSEL
WSELB
$\overline{RSELB}$
WSELA
SMSELA
BITDAT
CLRA
SHR
SHL
SHXA
WSELPC
LDPC
SMSELPC
CLRPC
SHXPC
ADPC
WSELSP
SMSELSP

FIG. 201B

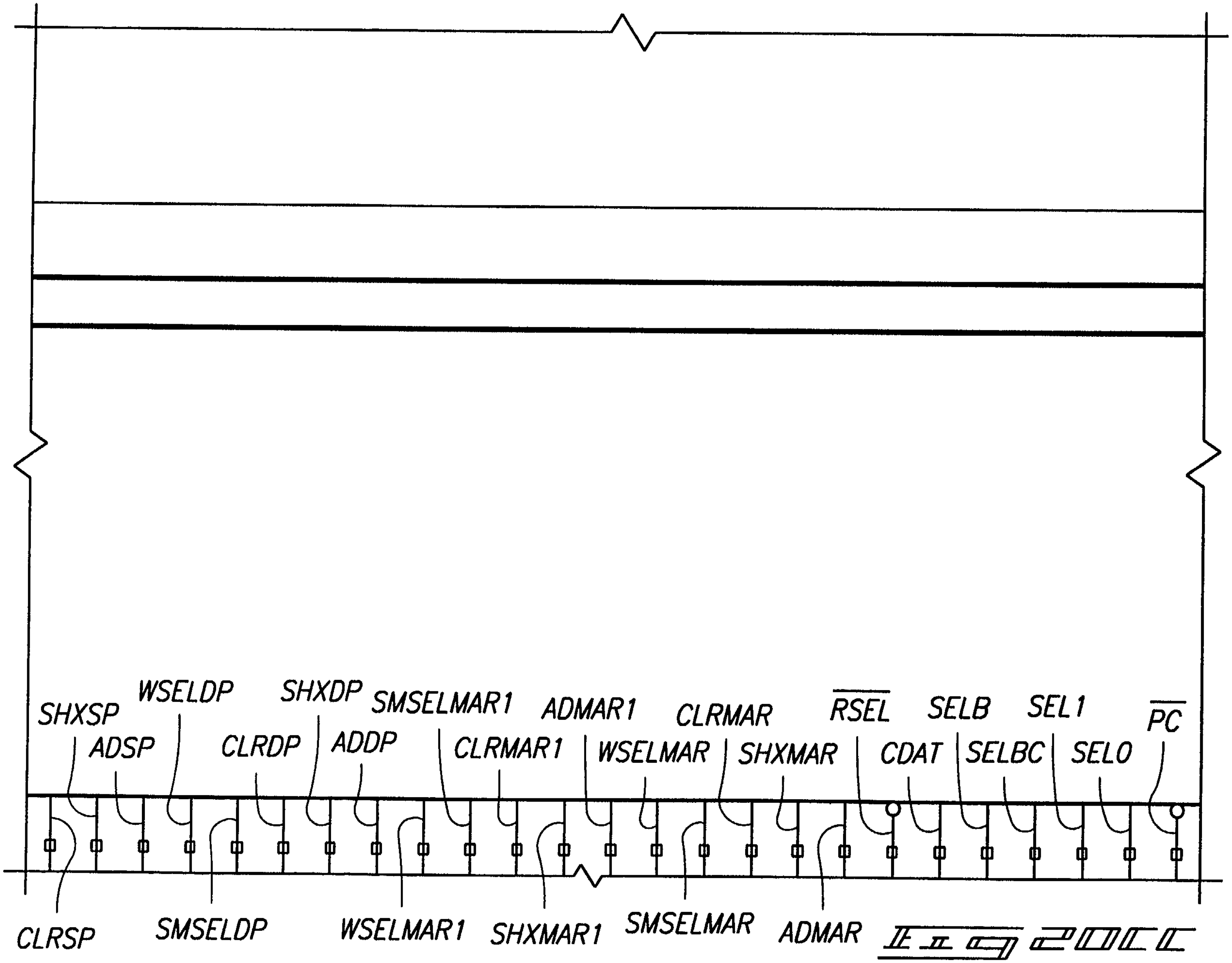

SHXSP
WSELDP
SHXDP
SMSELMAR1
ADMAR1
CLRMAR
$\overline{RSEL}$
SELB
SEL1
$\overline{PC}$
ADSP
CLRDP
ADDP
CLRMAR1
WSELMAR
SHXMAR
CDAT
SELBC
SEL0
CLRSP
SMSELDP
WSELMAR1
SHXMAR1
SMSELMAR
ADMAR

Fig 20CC

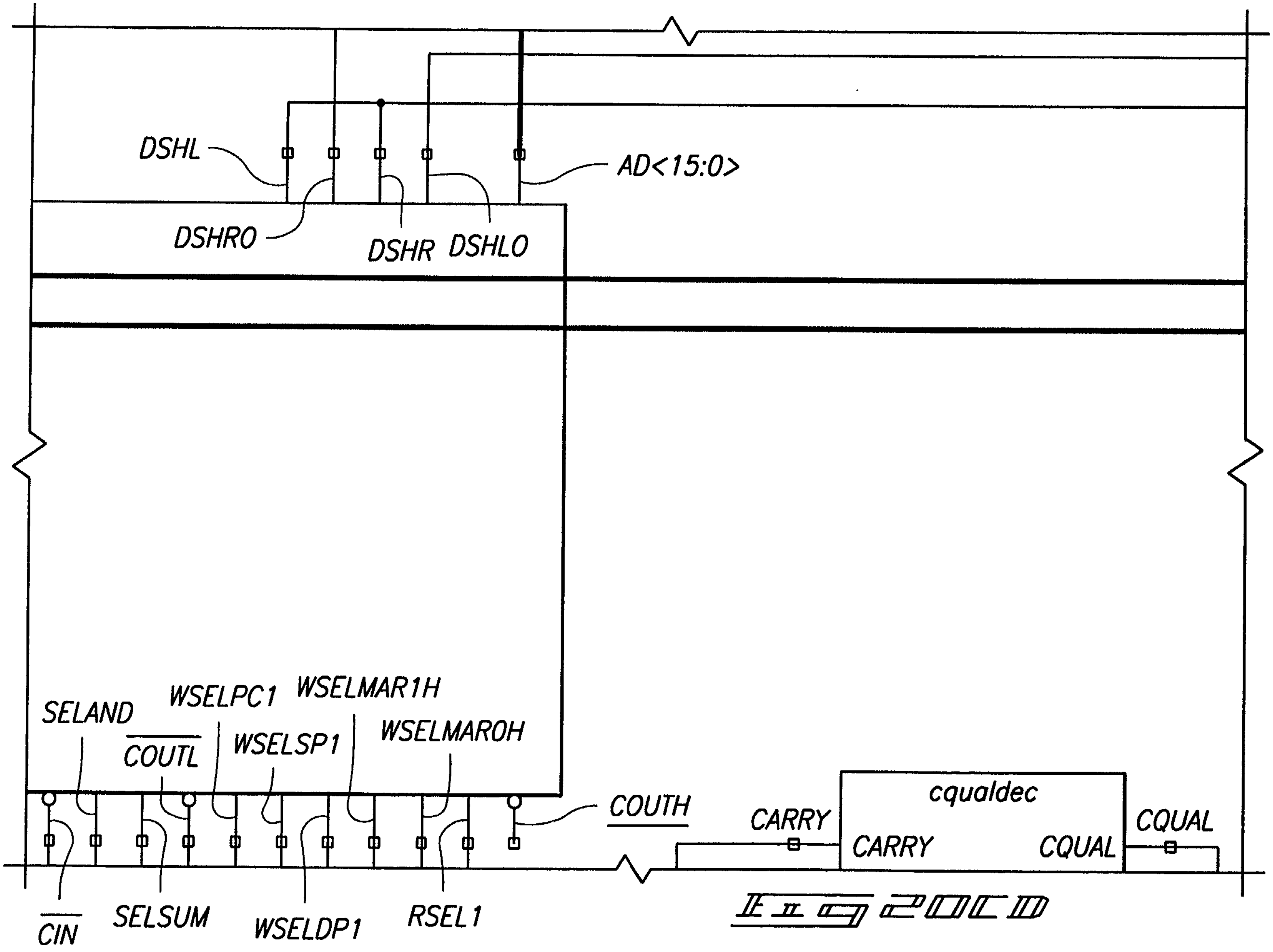
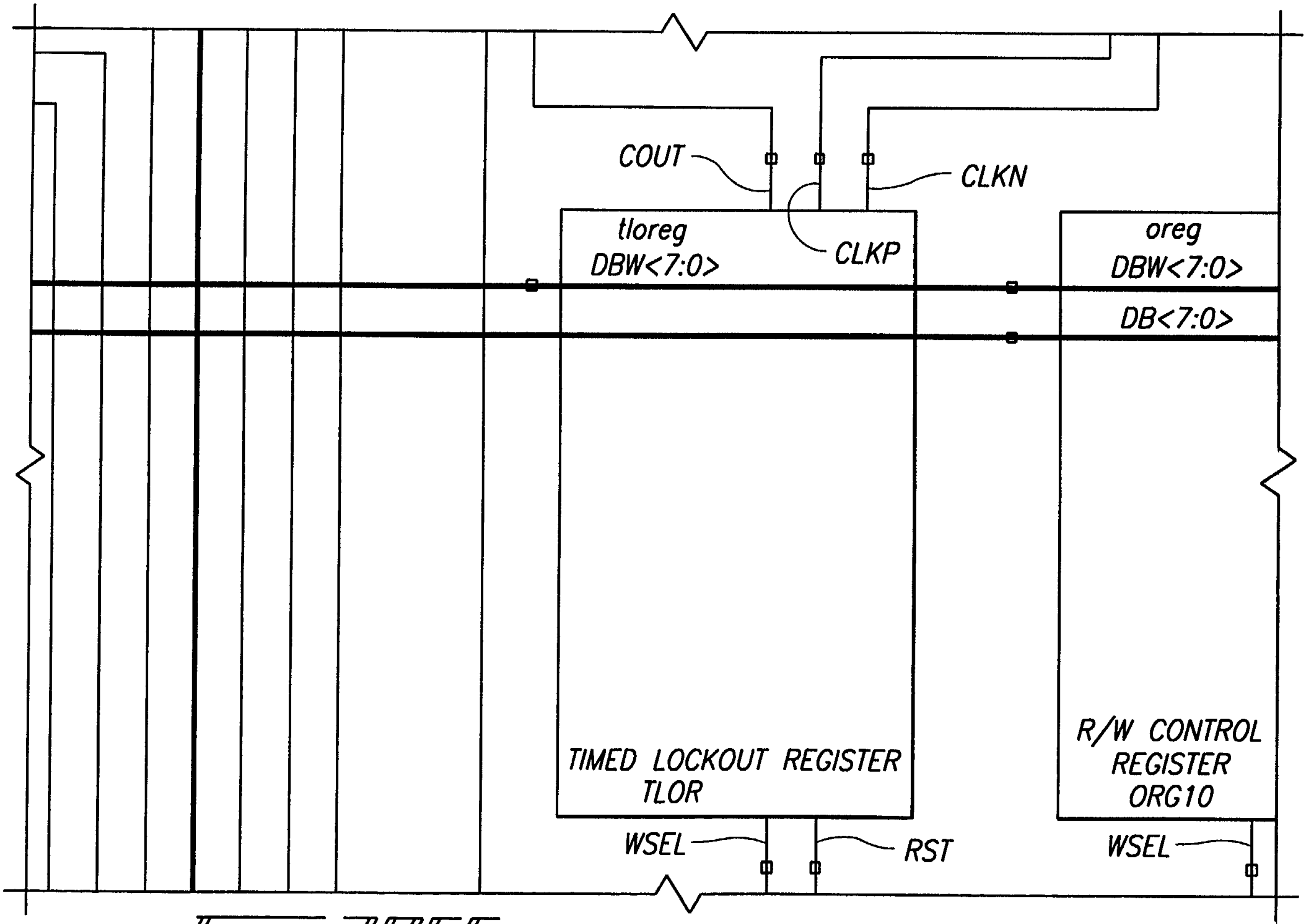

DSHL
DSHRO
DSHR
DSHLO
AD<15:0>
SELAND
WSELPC1
WSELMAR1H
$\overline{\text{COUTL}}$
WSELSP1
WSELMAR0H
COUTH
$\overline{\text{CIN}}$
SELSUM
WSELDP1
RSEL1
cqualdec
CARRY
CARRY
CQUAL
CQUAL

Fig 20CD



COUT
CLKN
tloreg
DBW<7:0>
CLKP
oreg
DBW<7:0>
DB<7:0>
TIMED LOCKOUT REGISTER
TLOR
R/W CONTROL
REGISTER
ORG10
WSEL
RST
WSEL

Fig 20CE

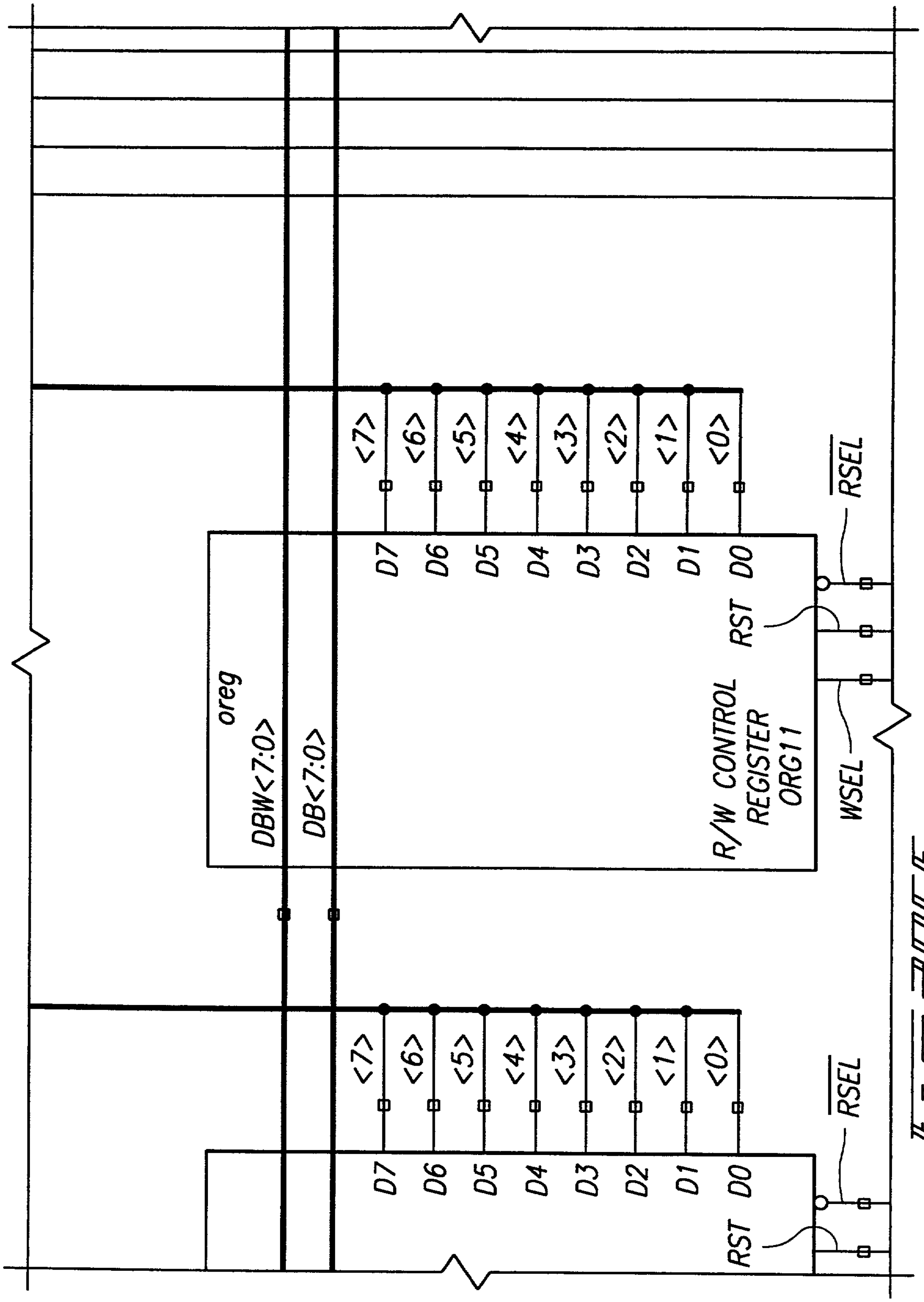

oreg
DBW<7:0>
DB<7:0>
R/W CONTROL
REGISTER
ORG11
<7>
<6>
<5>
<4>
<3>
<2>
<1>
<0>
D7
D6
D5
D4
D3
D2
D1
D0
RST
RSEL
WSEL
<7>
<6>
<5>
<4>
<3>
<2>
<1>
<0>
D7
D6
D5
D4
D3
D2
D1
D0
RST
RSEL

FIG 20CF

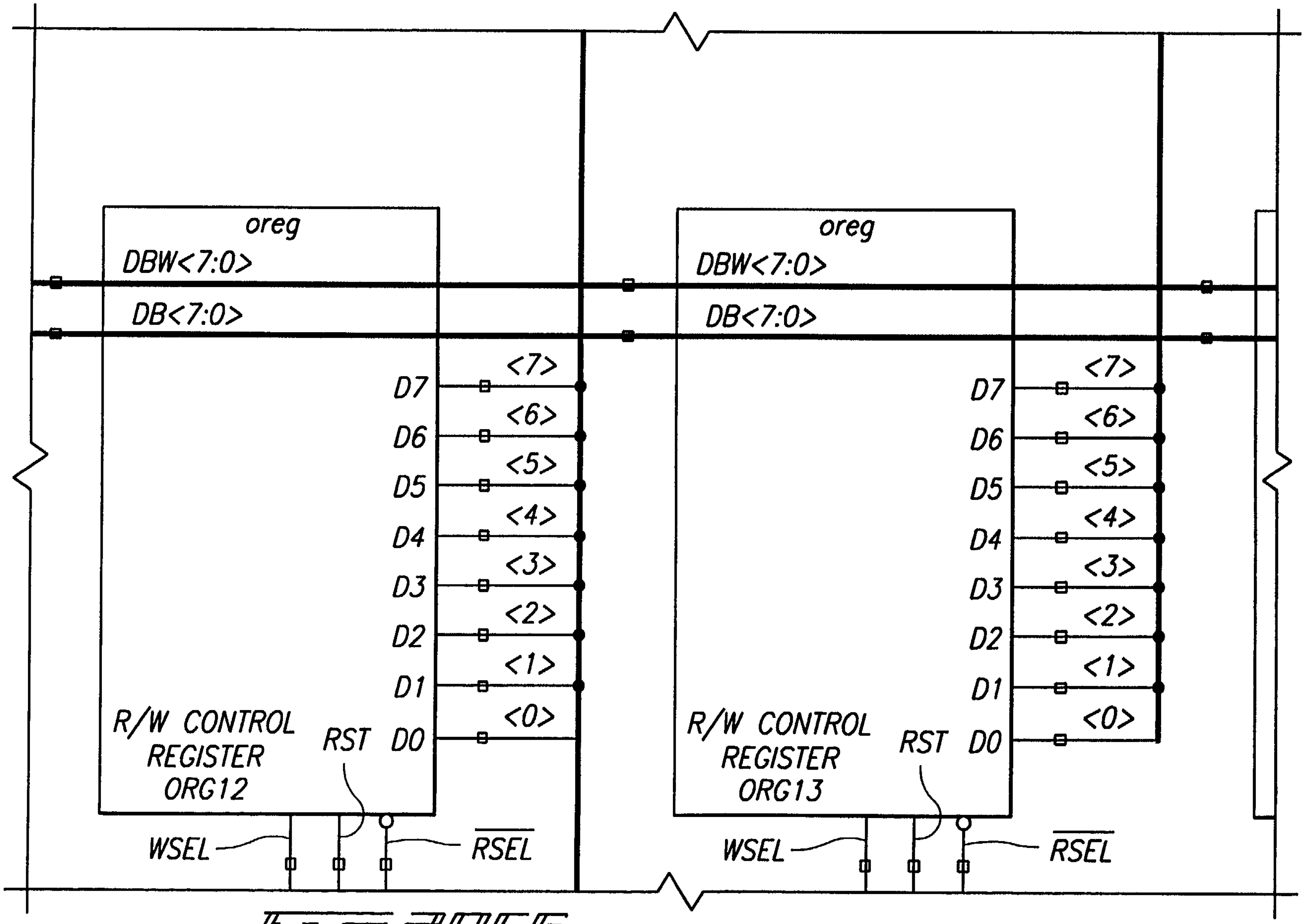

oreg
DBW<7:0>
DB<7:0>
D7
D6
D5
D4
D3
D2
D1
D0
<7>
<6>
<5>
<4>
<3>
<2>
<1>
<0>
R/W CONTROL REGISTER ORG12
RST
WSEL
$\overline{RSEL}$
oreg
DBW<7:0>
DB<7:0>
D7
D6
D5
D4
D3
D2
D1
D0
<7>
<6>
<5>
<4>
<3>
<2>
<1>
<0>
R/W CONTROL REGISTER ORG13
RST
WSEL
$\overline{RSEL}$

Fig 20CG

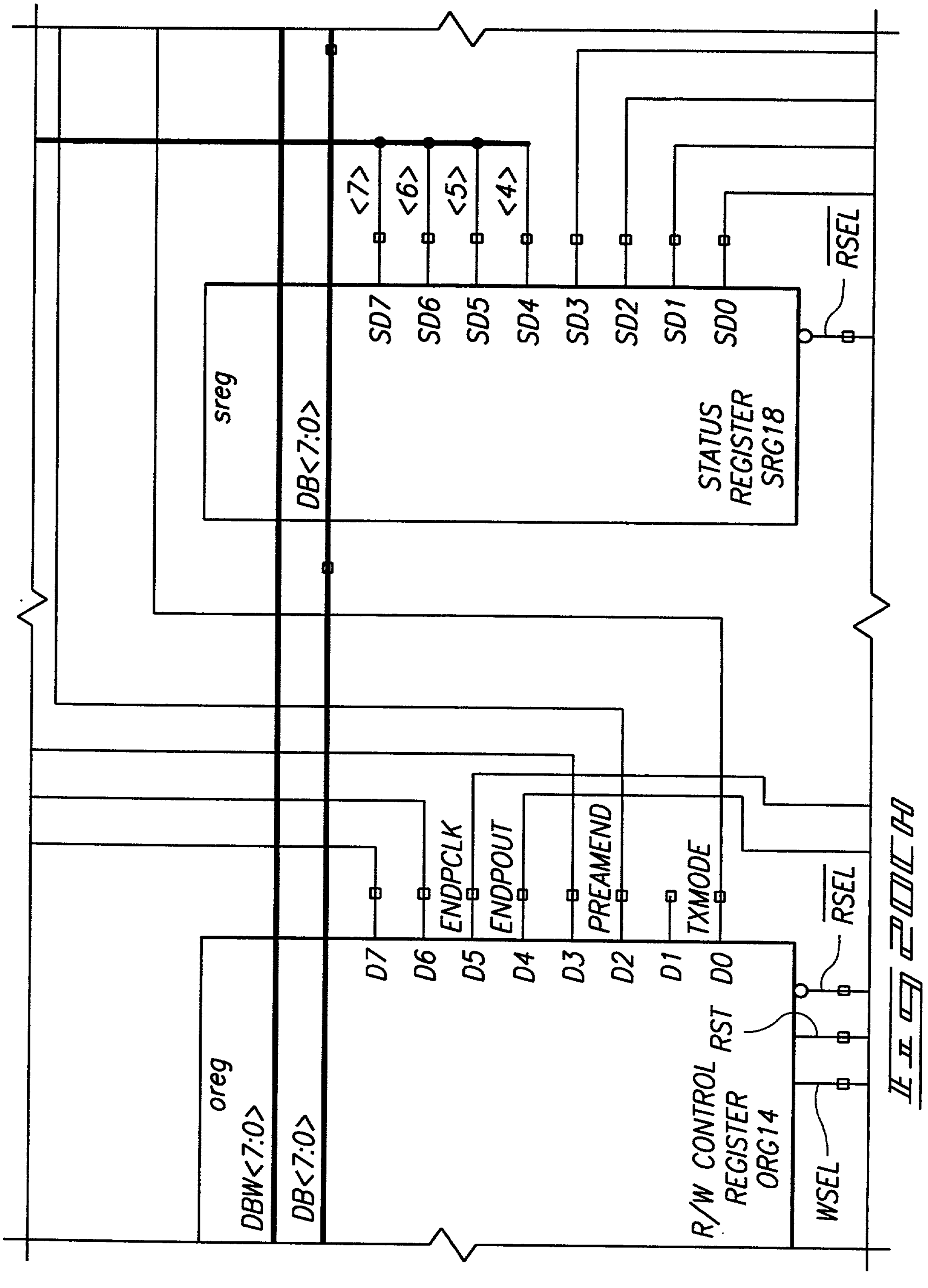


FIG 20CH
sreg
DB<7:0>
SD7
SD6
SD5
SD4
SD3
SD2
SD1
SD0
<7>
<6>
<5>
<4>
RSEL
STATUS
REGISTER
SRG18
oreg
DBW<7:0>
DB<7:0>
D7
D6
D5
D4
D3
D2
D1
D0
ENDPCLK
ENDPOUT
PREAMEND
TXMODE
RSEL
RST
WSEL
R/W CONTROL
REGISTER
ORG14

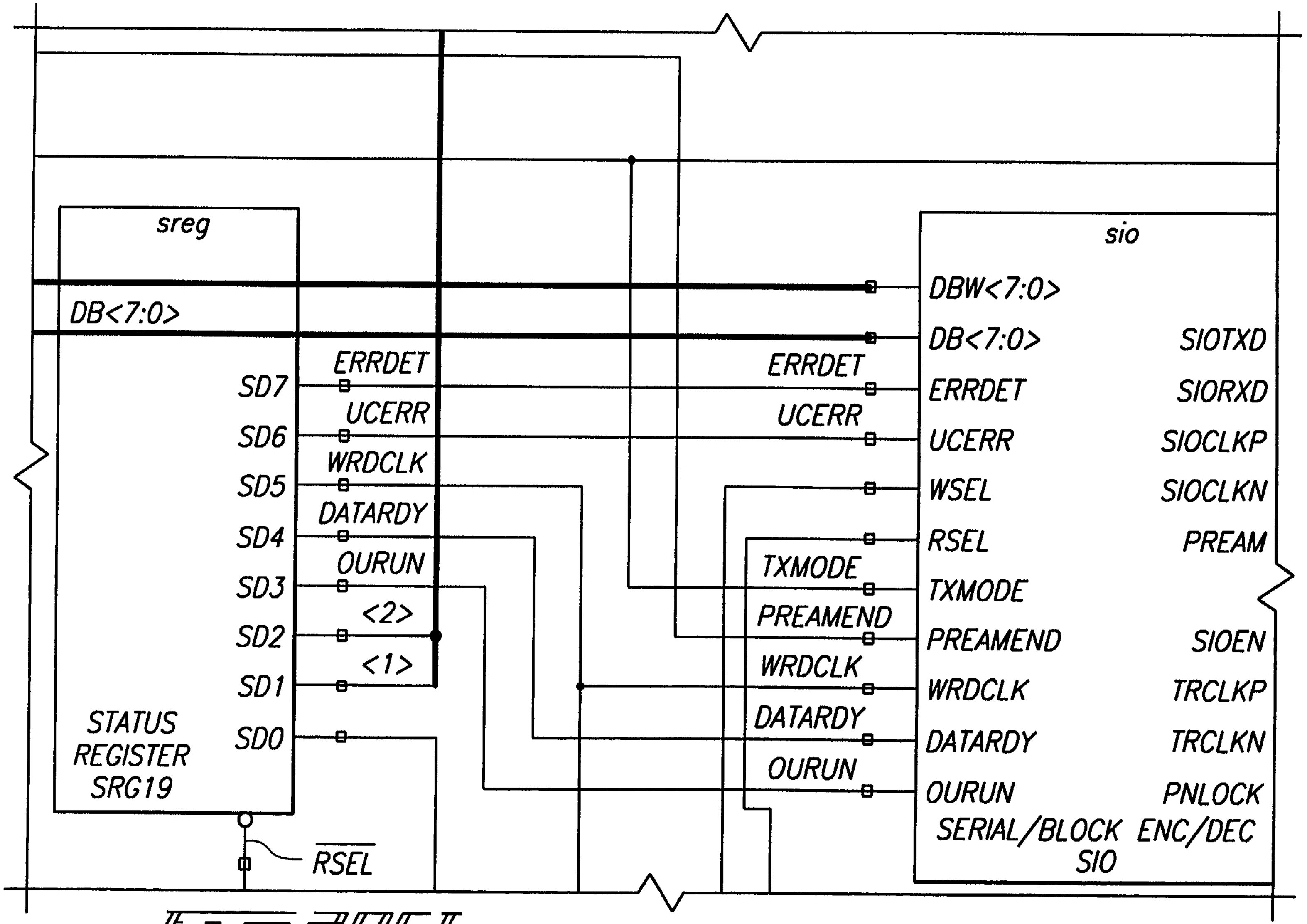

sreg
DB<7:0>
SD7
SD6
SD5
SD4
SD3
SD2
SD1
SD0
STATUS
REGISTER
SRG19
ERRDET
UCERR
WRDCLK
DATARDY
OURUN
<2>
<1>
$\overline{RSEL}$
ERRDET
UCERR
TXMODE
PREAMEND
WRDCLK
DATARDY
OURUN
sio
DBW<7:0>
DB<7:0>
ERRDET
UCERR
WSEL
RSEL
TXMODE
PREAMEND
WRDCLK
DATARDY
OURUN
SIOTXD
SIORXD
SIOCLKP
SIOCLKN
PREAM
SIOEN
TRCLKP
TRCLKN
PNLOCK
SERIAL/BLOCK ENC/DEC
SIO

Fig 20CI

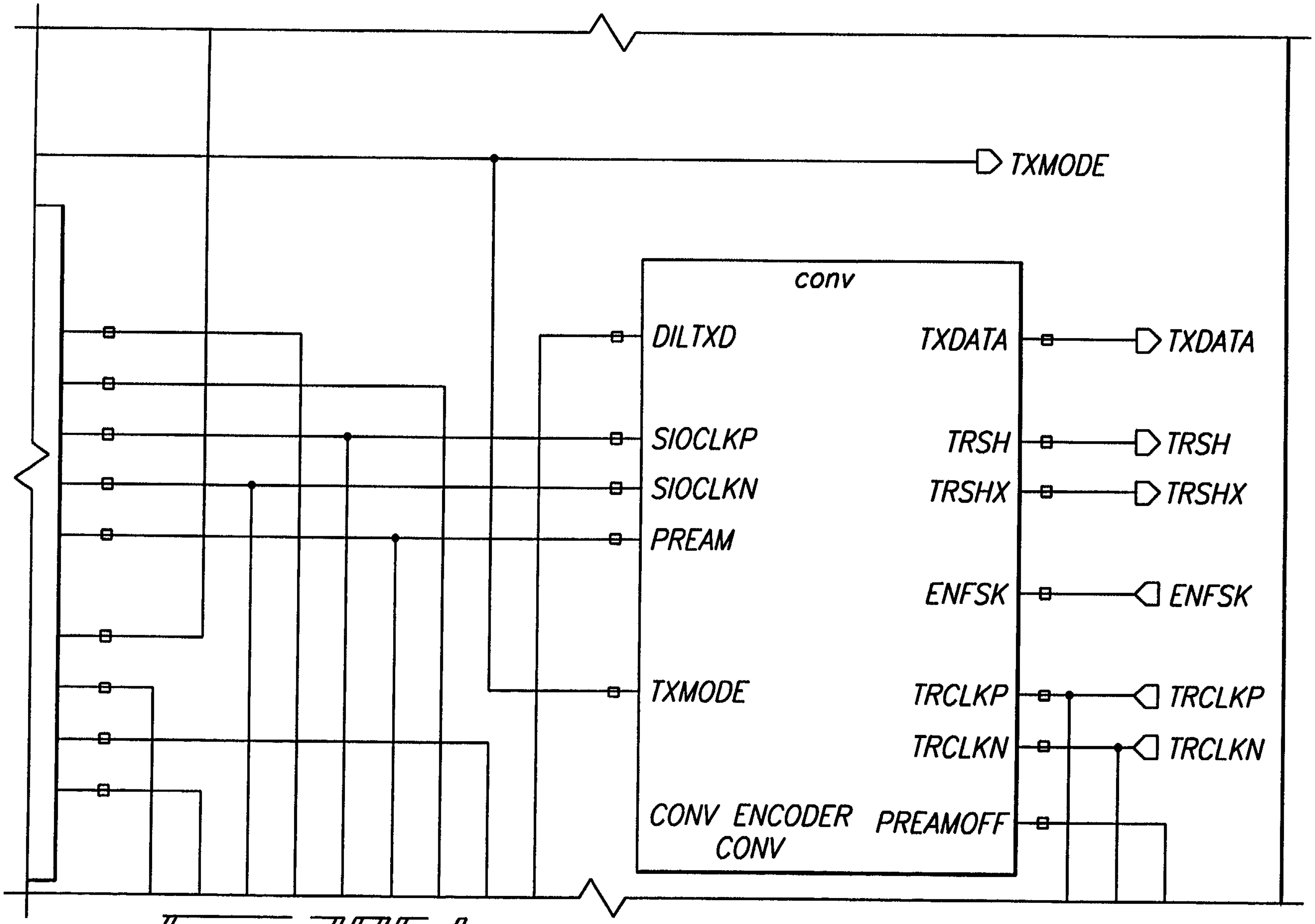

TXMODE
conv
DILTXD
SIOCLKP
SIOCLKN
PREAM
TXMODE
CONV ENCODER
CONV
TXDATA
TRSH
TRSHX
ENFSK
TRCLKP
TRCLKN
PREAMOFF
TXDATA
TRSH
TRSHX
ENFSK
TRCLKP
TRCLKN

Fig 20Cd

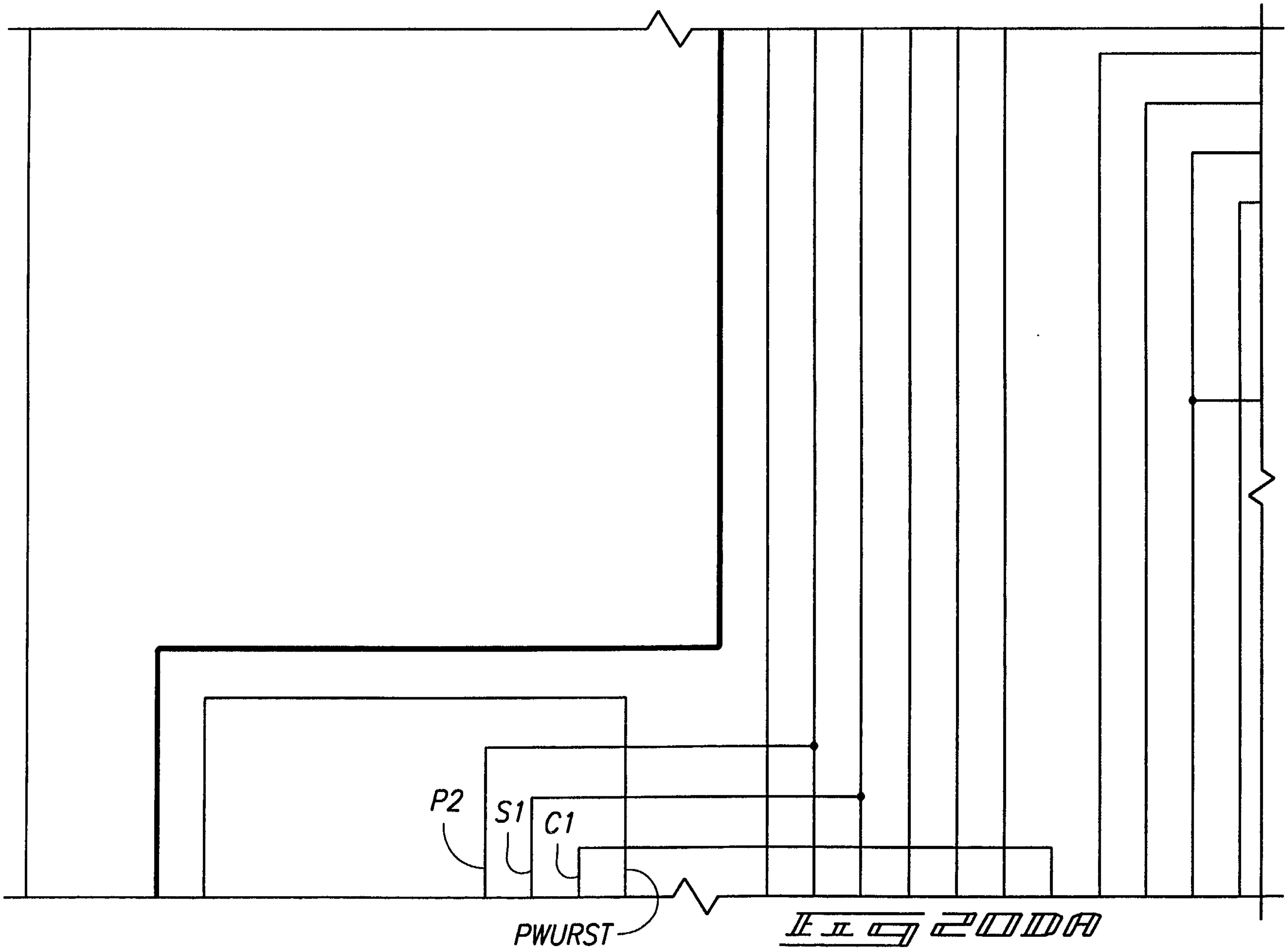


Fig 20DA

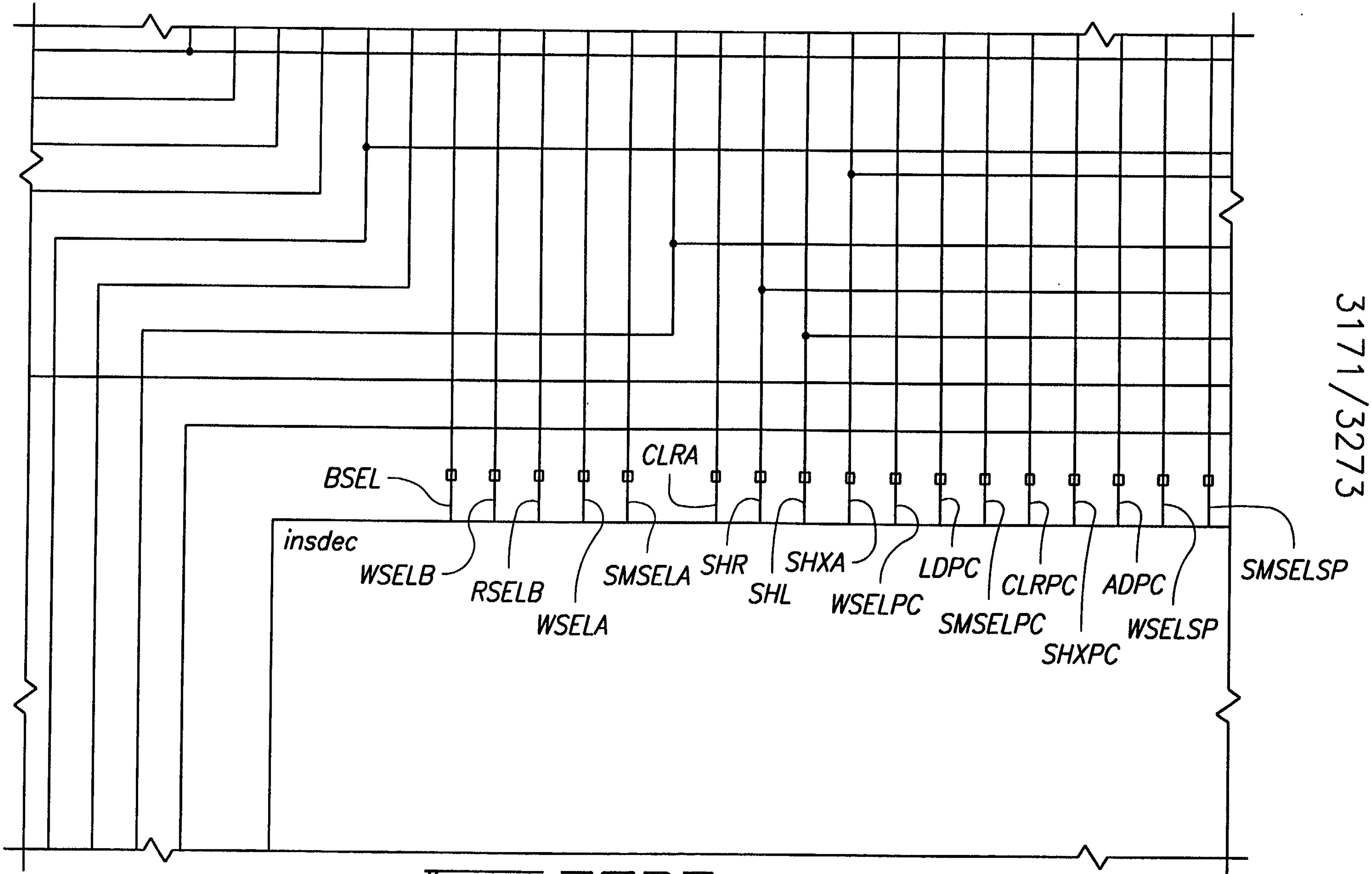

BSEL
CLRA
insdec
WSELB
RSELB
WSELA
SMSELA
SHR
SHL
SHXA
WSELPC
LDPC
SMSELPC
CLRPC
SHXPC
ADPC
WSELSP
SMSELSP

FIG 20B

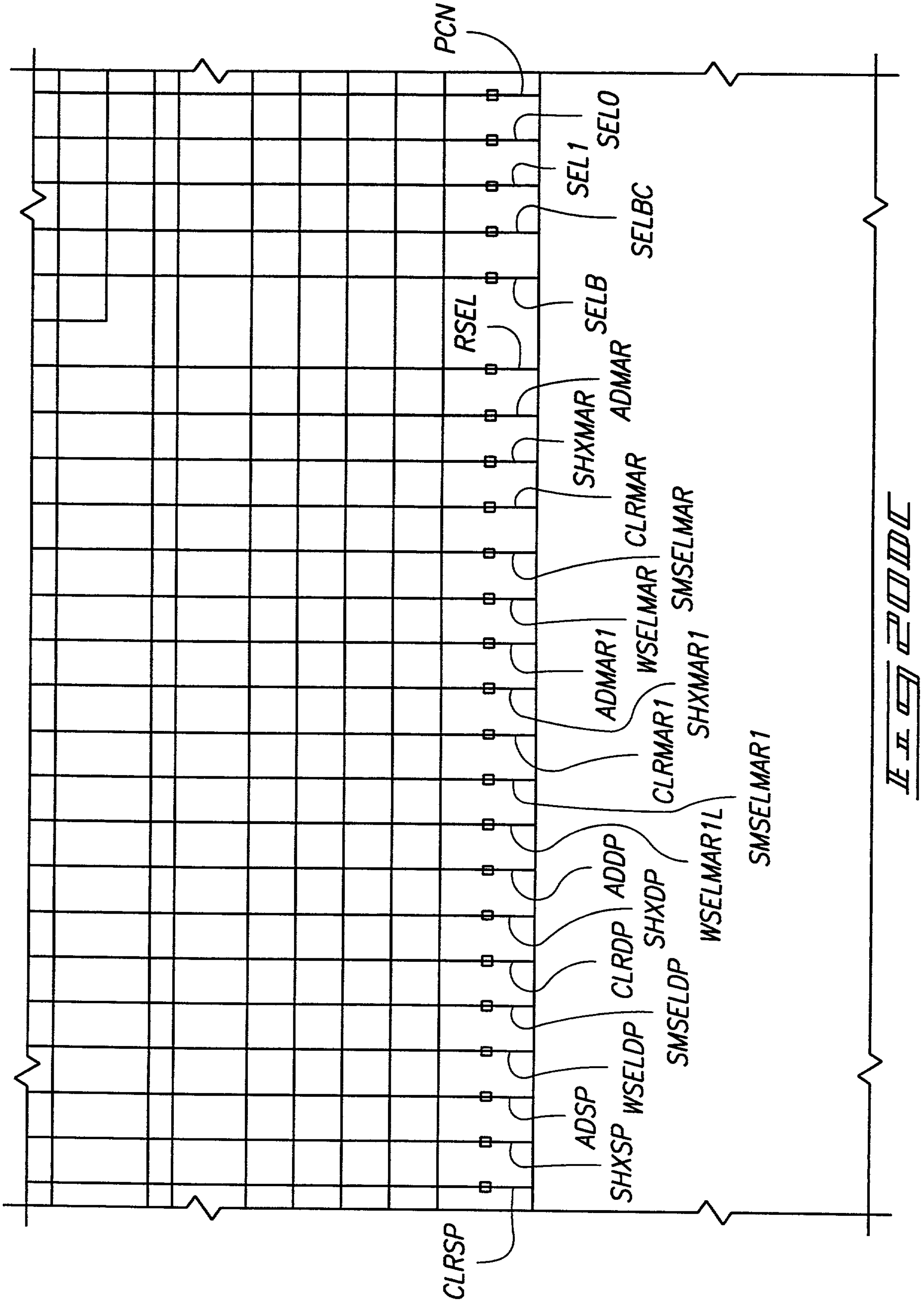

PCN
SEL0
SEL1
SELBC
SELB
RSEL
ADMAR
SHXMAR
CLRMAR
SMSELMAR
WSELMAR
ADMAR1
SHXMAR1
CLRMAR1
SMSELMAR1
WSELMAR1L
ADDP
SHXDP
CLRDP
SMSELDP
WSELDP
ADSP
SHXSP
CLRSP

Fig 20C

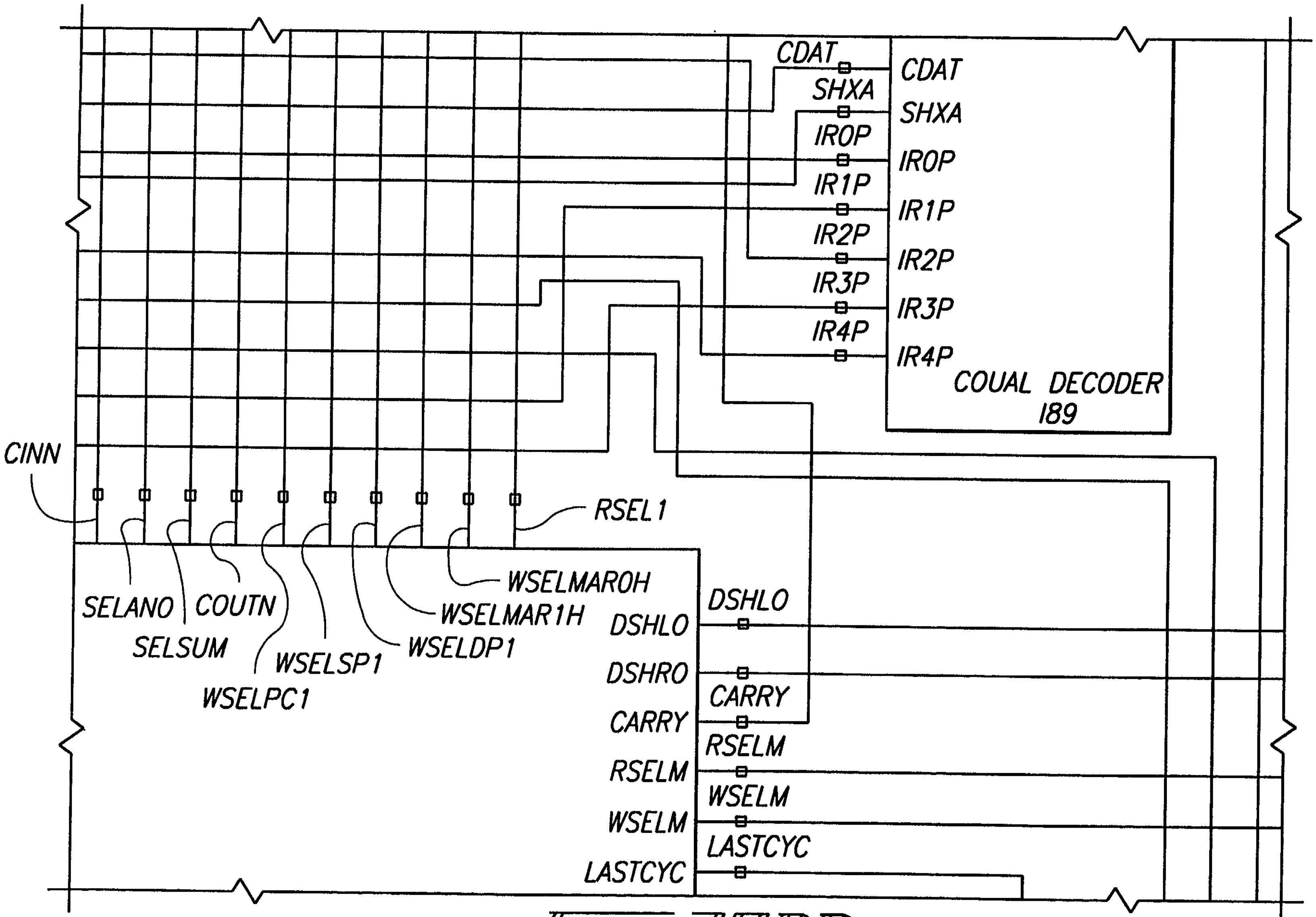

CDAT
SHXA
IR0P
IR1P
IR2P
IR3P
IR4P
CDAT
SHXA
IR0P
IR1P
IR2P
IR3P
IR4P
COUAL DECODER
189
CINN
RSEL1
WSELMAR0H
WSELMAR1H
WSELDP1
WSELSP1
WSELPC1
COUTN
SELSUM
SELAN0
DSHLO
DSHLO
DSHRO
CARRY
CARRY
RSELM
RSELM
WSELM
WSELM
LASTCYC
LASTCYC

FIG. 20DD

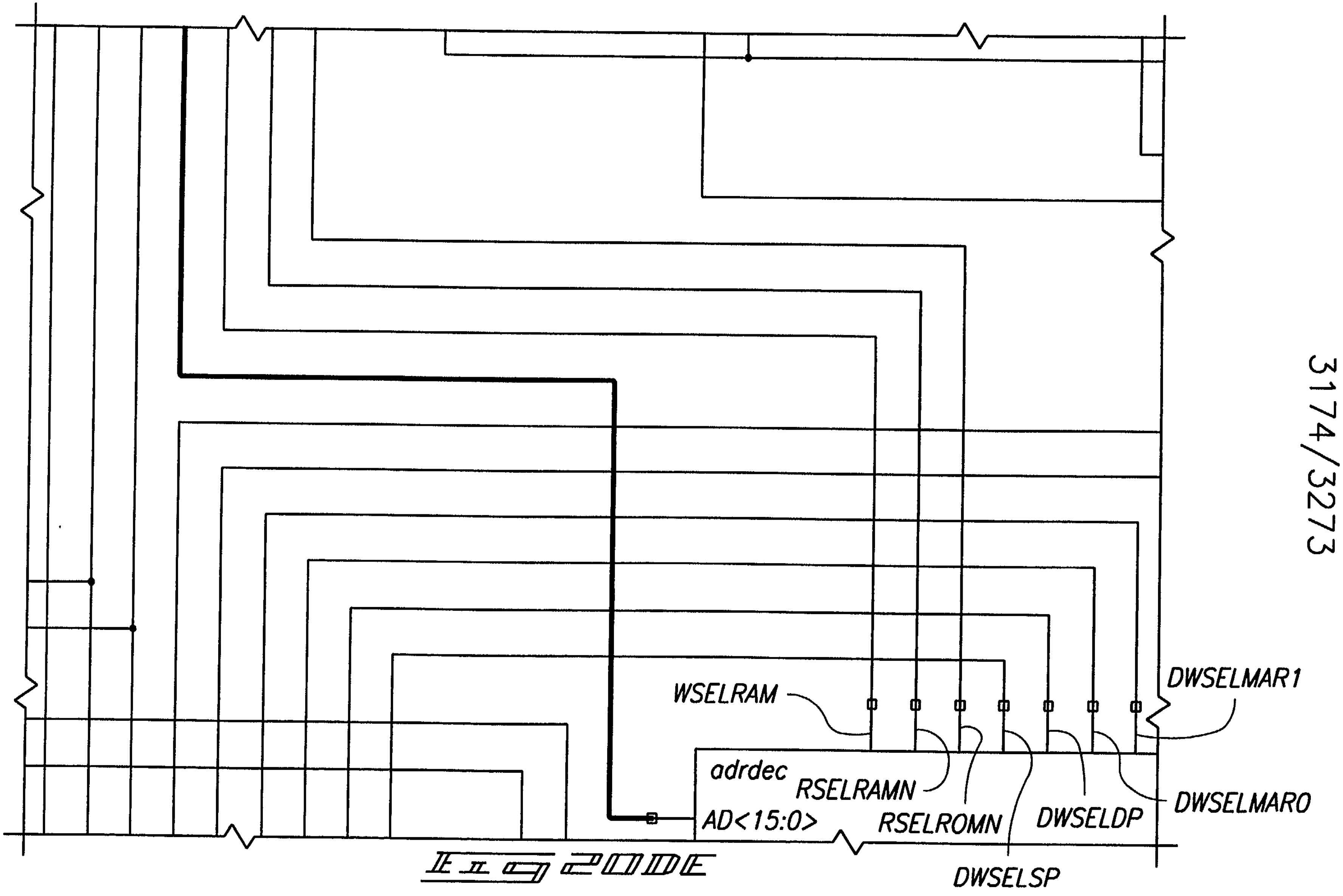

WSELRAM
adrdec
RSELRAMN
AD<15:0>
RSELROMN
DWSELSP
DWSELDP
DWSELMAR0
DWSELMAR1

Fig 20DE

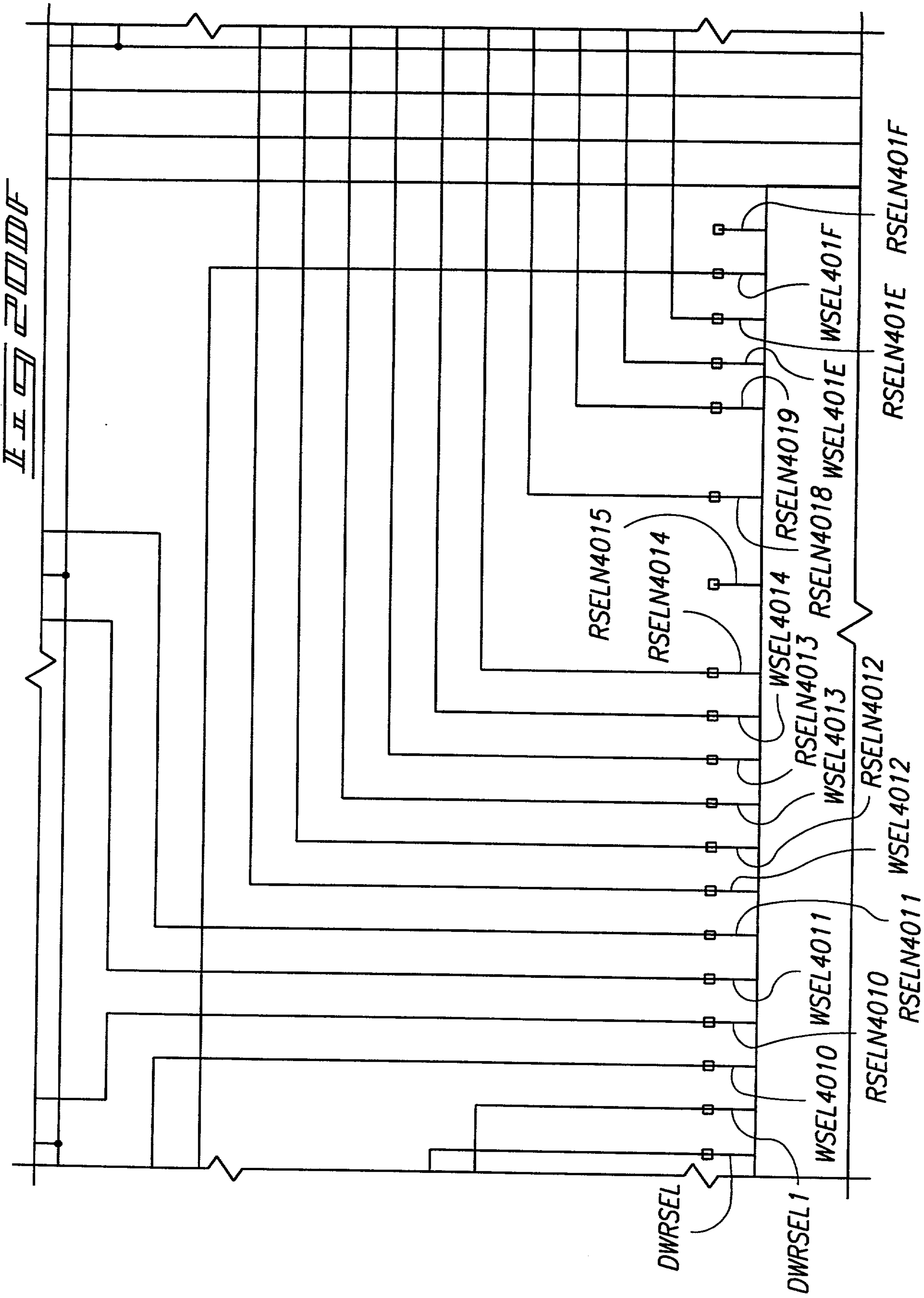

RSELN401F
WSEL401F
RSELN401E
WSEL401E
RSELN4019
WSEL4018
RSELN4018
RSELN4015
RSELN4014
WSEL4014
RSELN4014
WSEL4013
RSELN4013
WSEL4013
RSELN4012
WSEL4012
RSELN4011
WSEL4011
RSELN4010
WSEL4010
RSELN4010
WSEL4010
DWRSEL
DWRSEL1

Fig 20DF

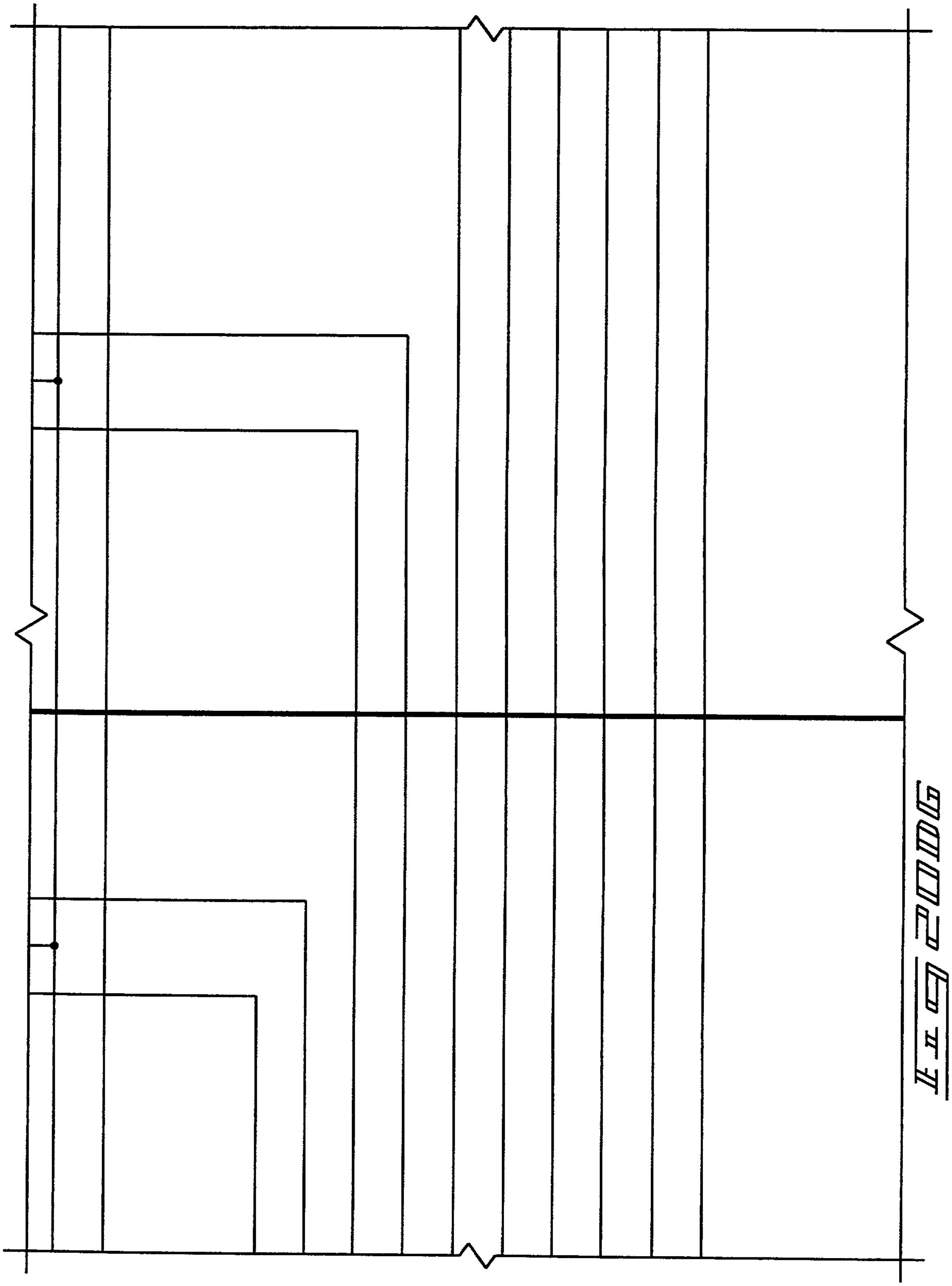


FIG 200G

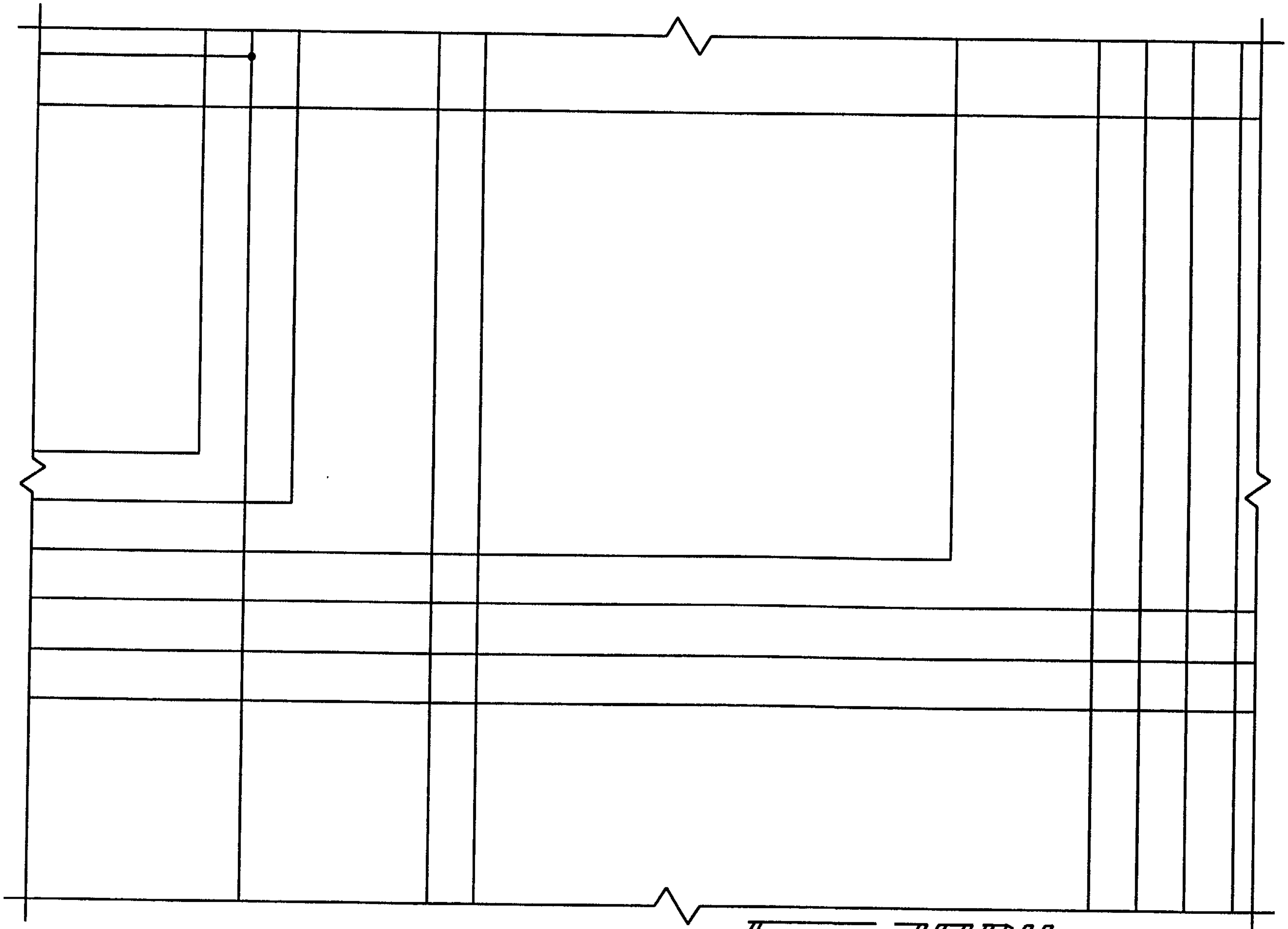


Fig 200DH

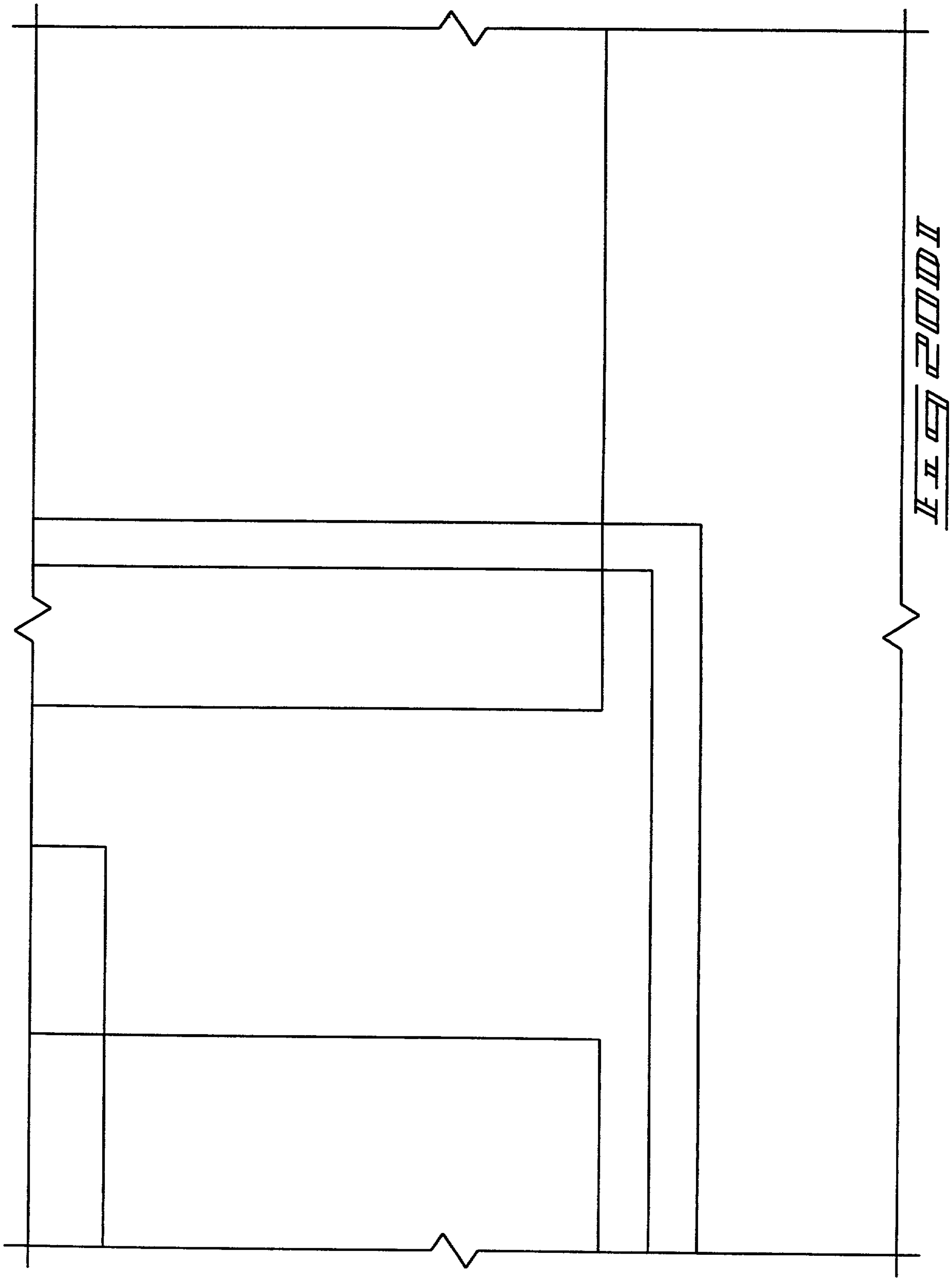


Fig 2001

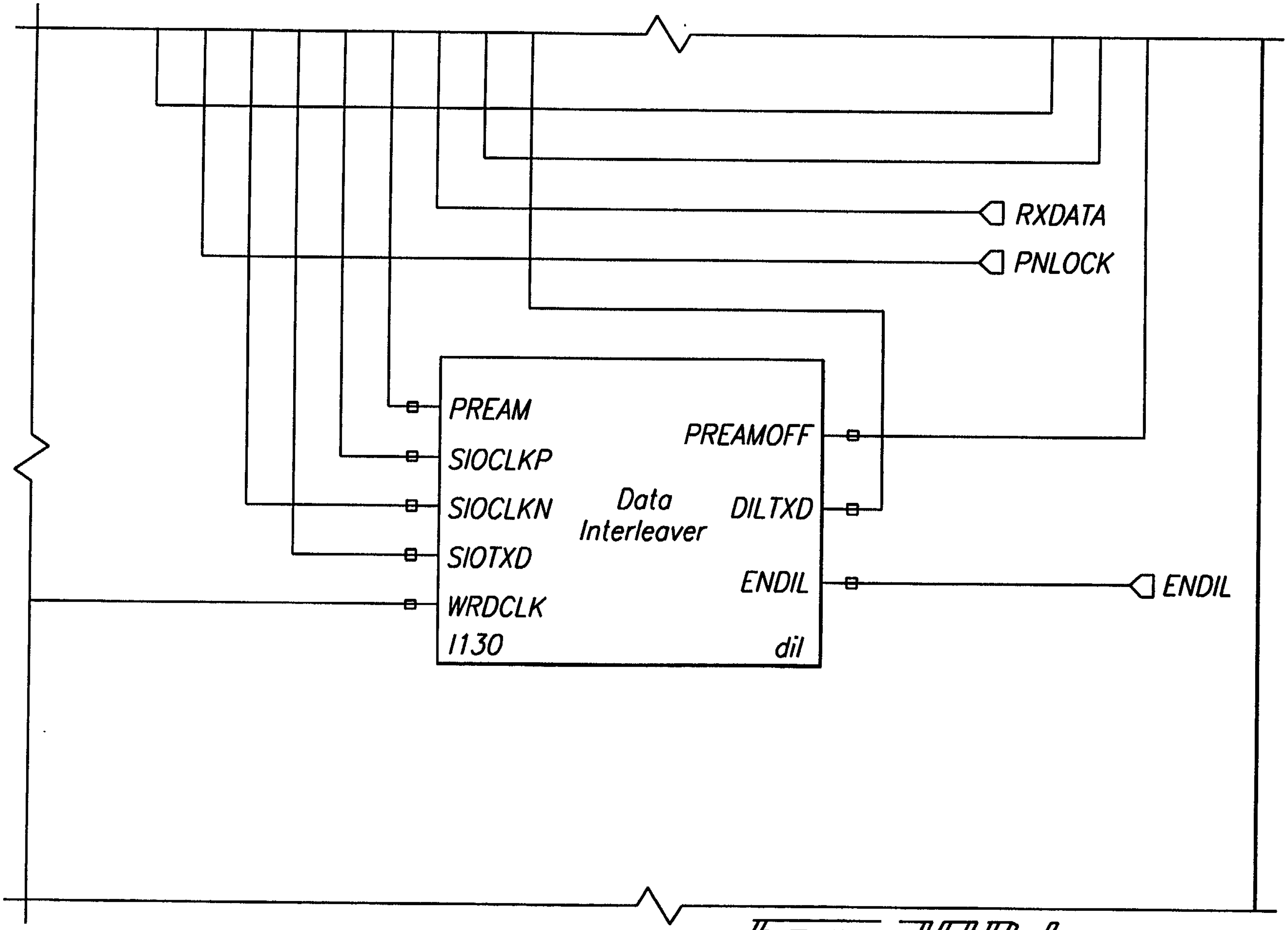

RXDATA
PNLOCK
PREAM
SIOCLKP
SIOCLKN
SIOTXD
WRDCLK
I130
Data
Interleaver
PREAMOFF
DILTXD
ENDIL
dil
ENDIL

Fig 20Dd

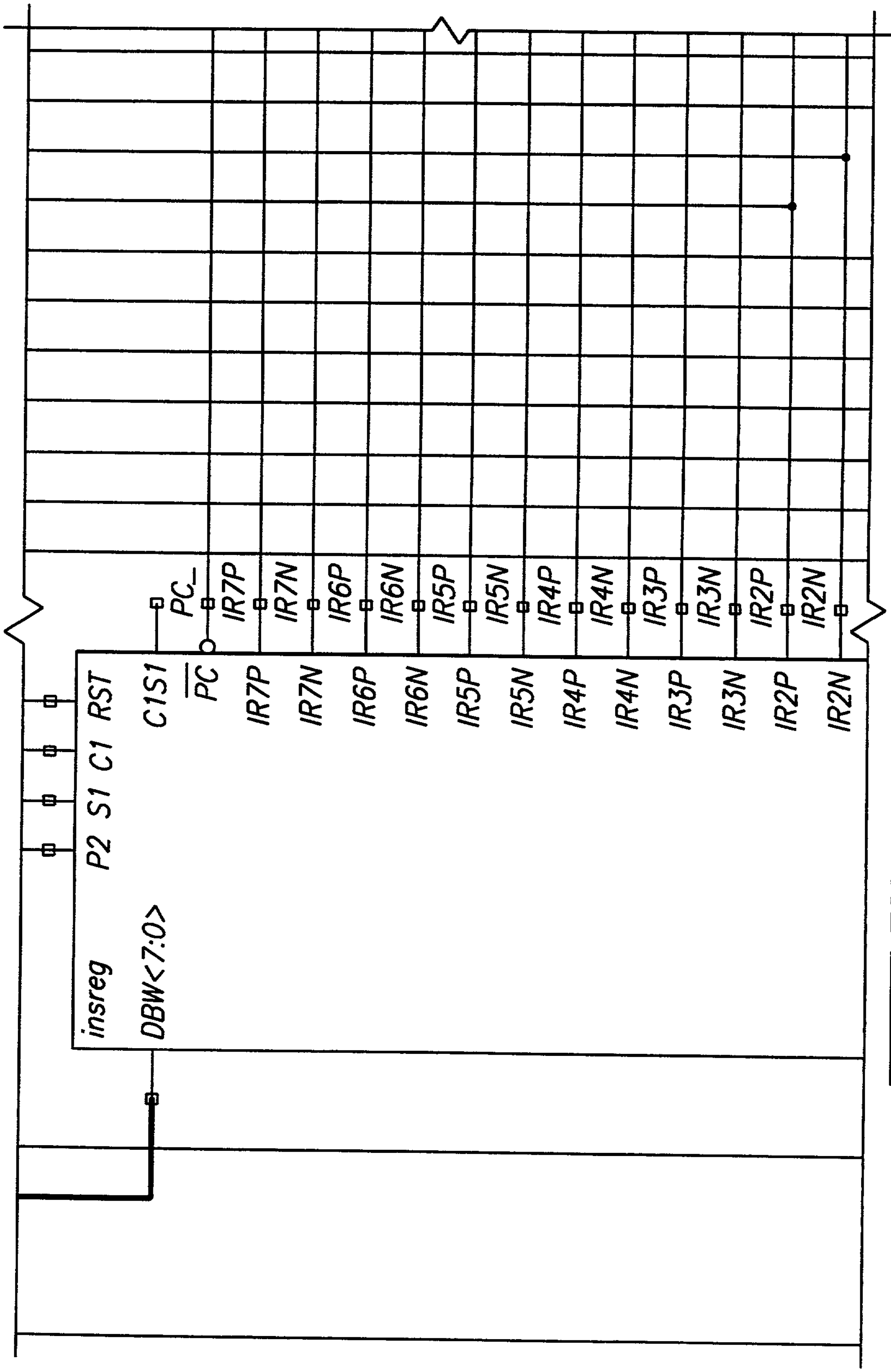

insreg
DBW<7:0>
P2
S1
C1
RST
C1S1
PC
PC_
IR7P
IR7N
IR6P
IR6N
IR5P
IR5N
IR4P
IR4N
IR3P
IR3N
IR2P
IR2N

FIG 20EA

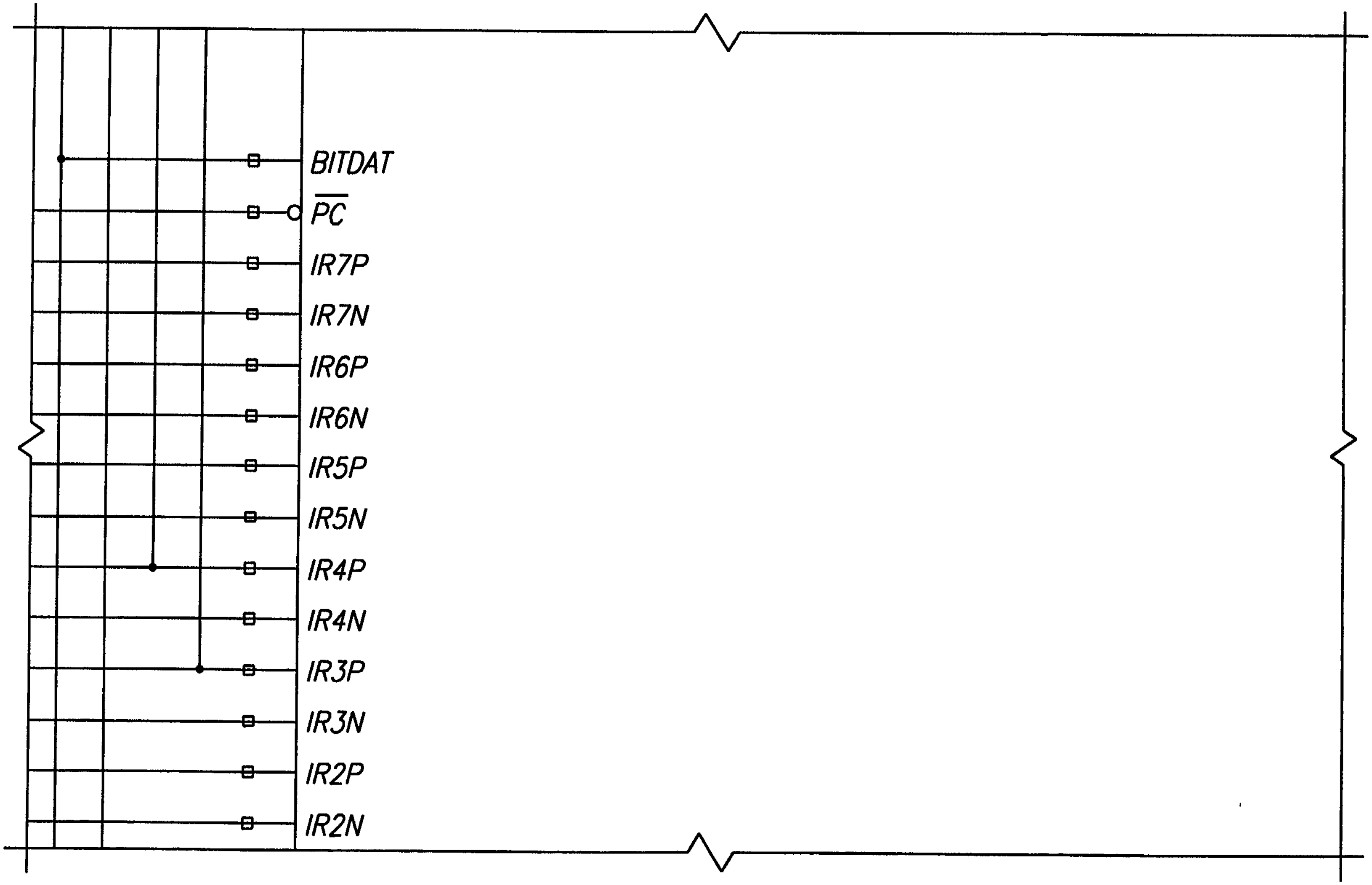

BITDAT
$\overline{PC}$
IR7P
IR7N
IR6P
IR6N
IR5P
IR5N
IR4P
IR4N
IR3P
IR3N
IR2P
IR2N

Fig 20EB

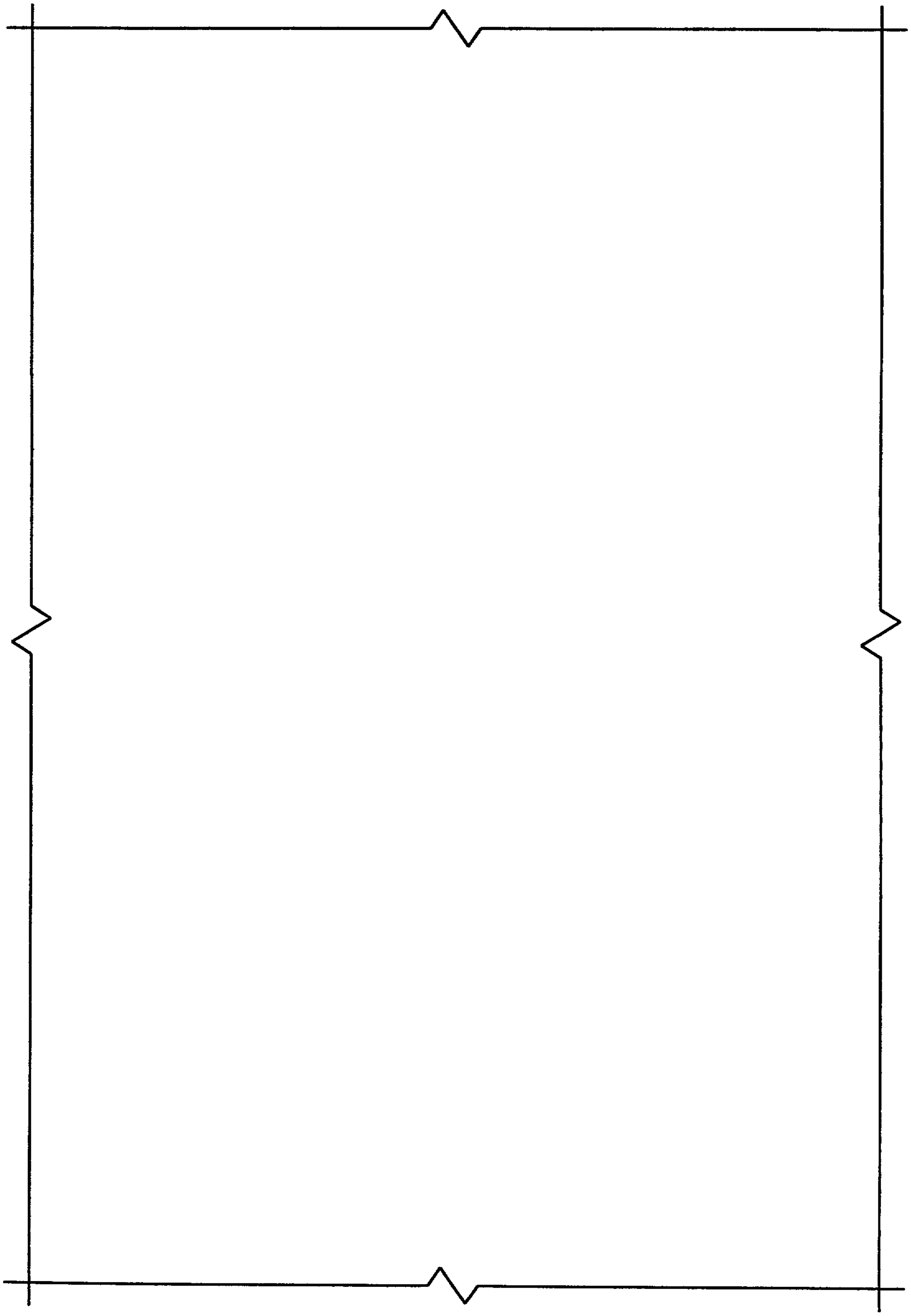


Fig 7EC

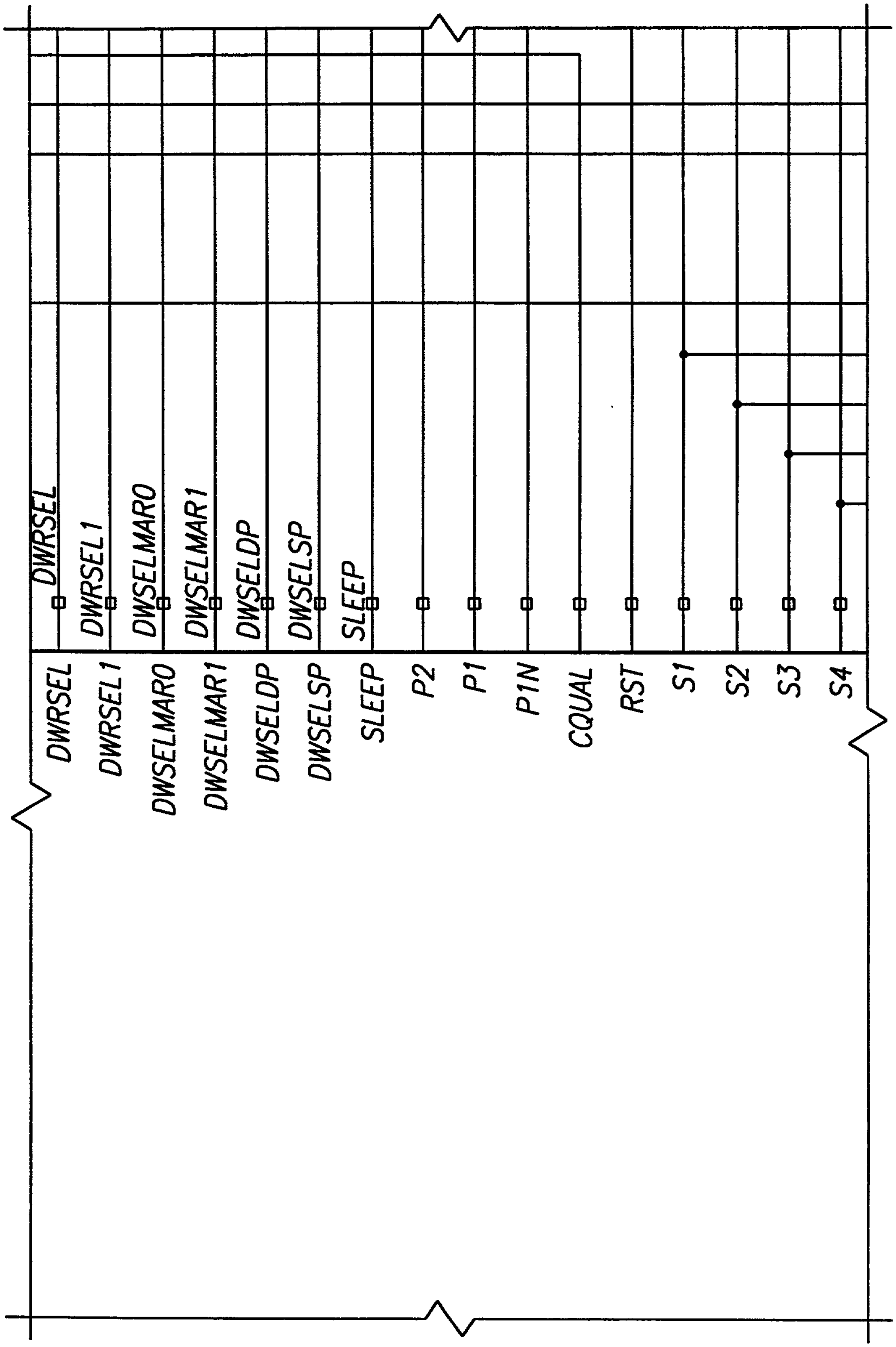

DWRSEL
DWRSEL1
DWSELMAR0
DWSELMAR1
DWSELDP
DWSELSP
SLEEP
DWRSEL
DWRSEL1
DWSELMAR0
DWSELMAR1
DWSELDP
DWSELSP
SLEEP
P2
P1
P1N
CQUAL
RST
S1
S2
S3
S4

Fig 20ED

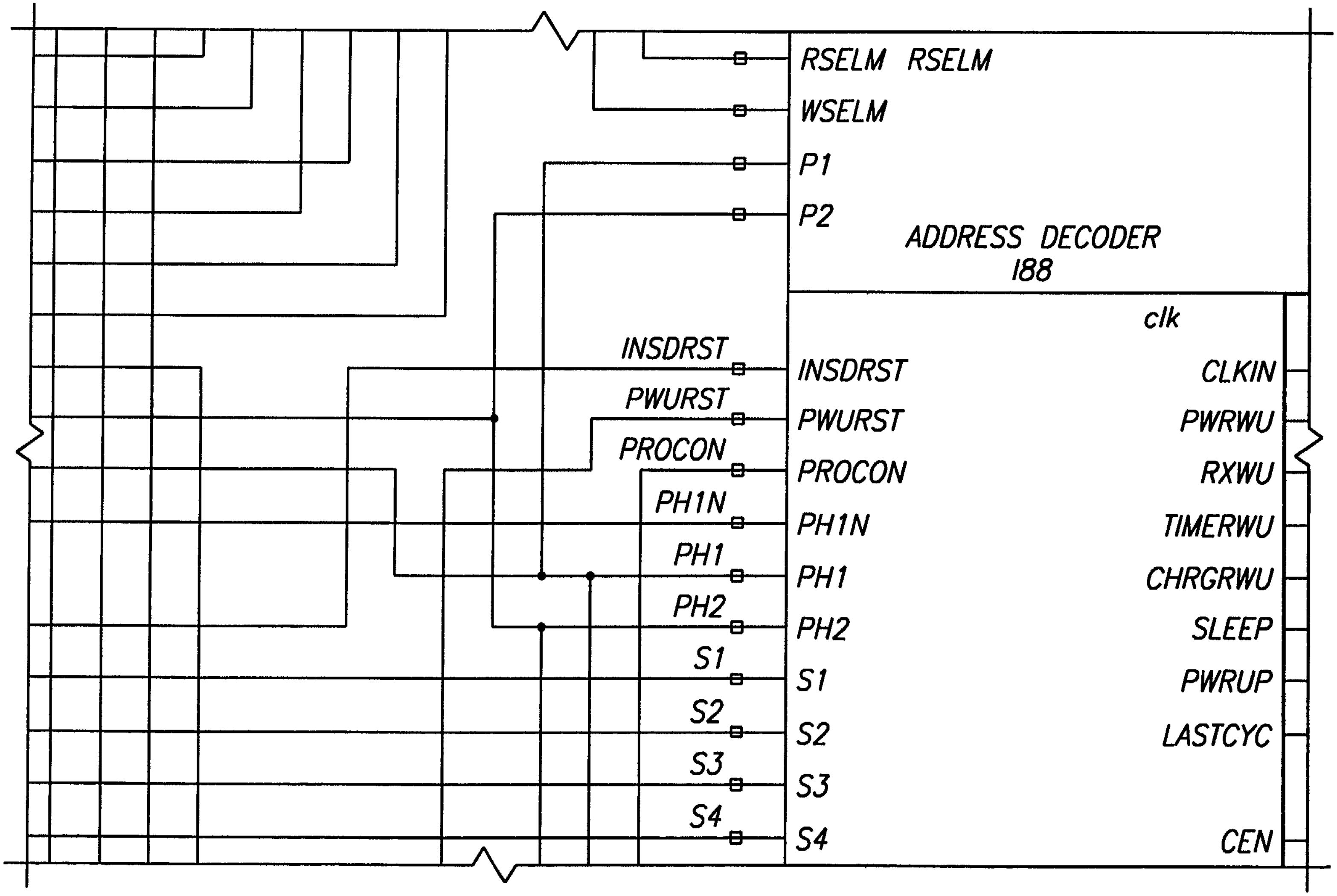

RSELM
RSELM
WSELM
P1
P2
ADDRESS DECODER
188
clk
INSDRST
INSDRST
PWURST
PWURST
PROCON
PROCON
PH1N
PH1N
PH1
PH1
PH2
PH2
S1
S1
S2
S2
S3
S3
S4
S4
CLKIN
PWRWU
RXWU
TIMERWU
CHRGRWU
SLEEP
PWRUP
LASTCYC
CEN

Fig 20EE

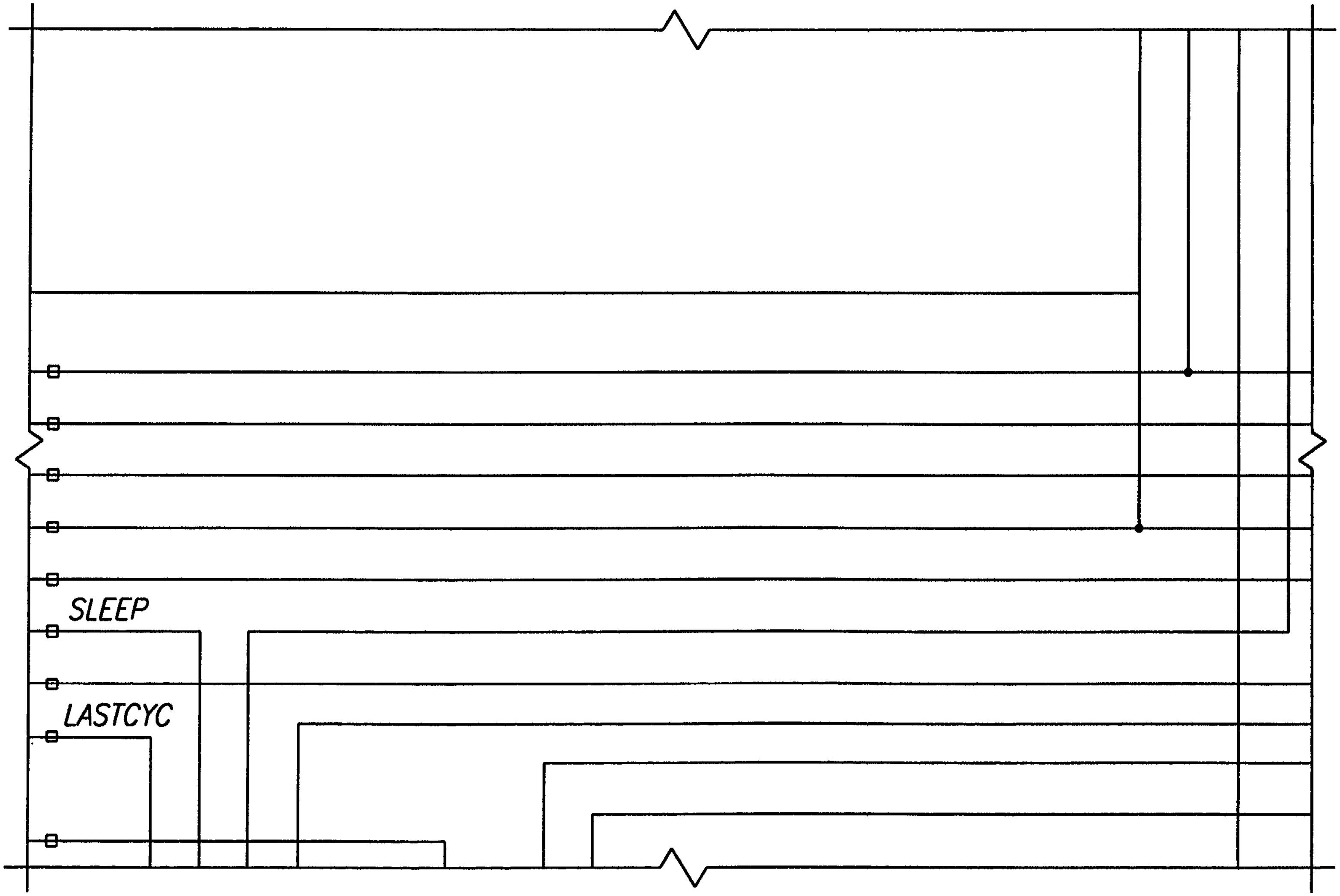


Fig 20EF

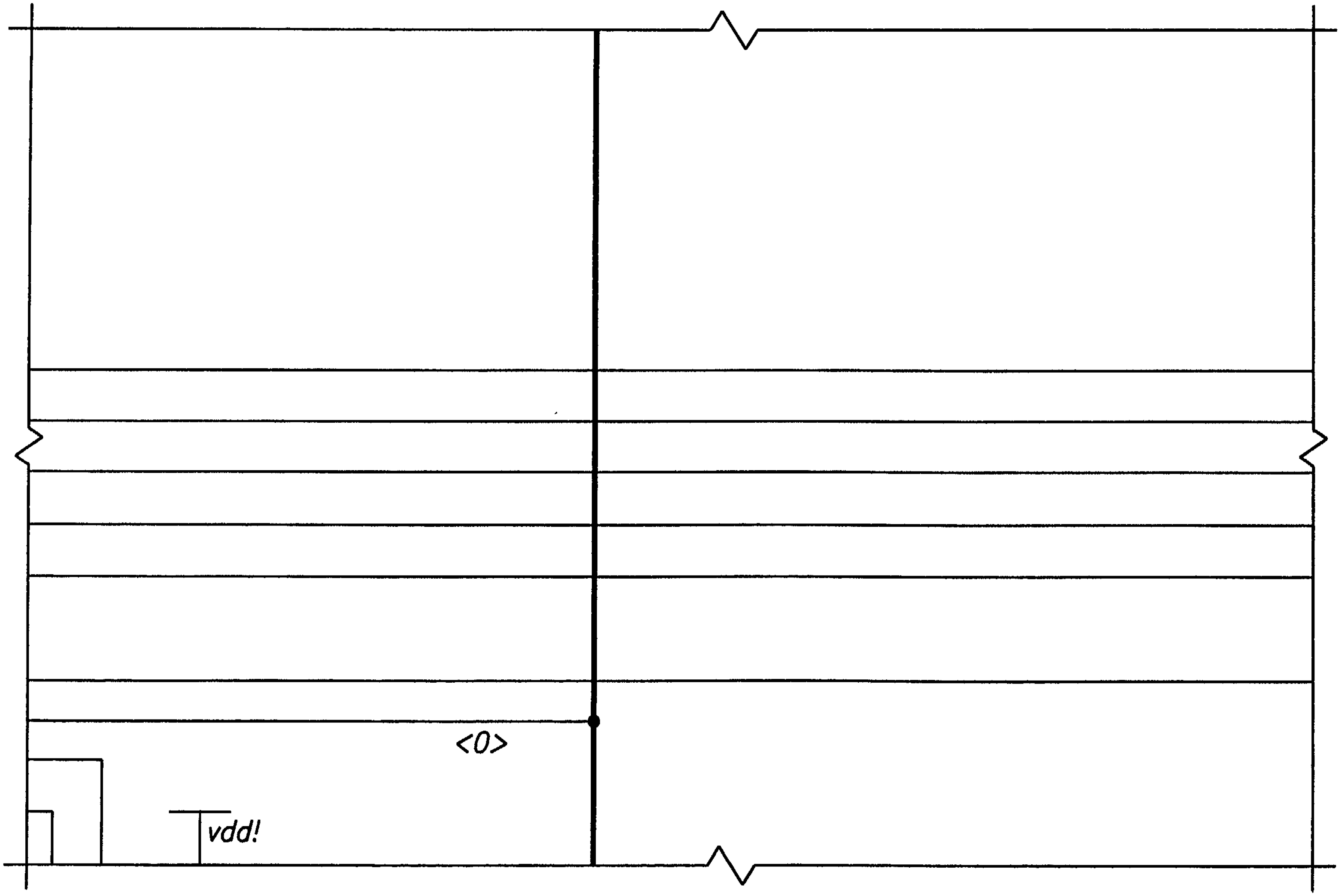


Fig 20EG

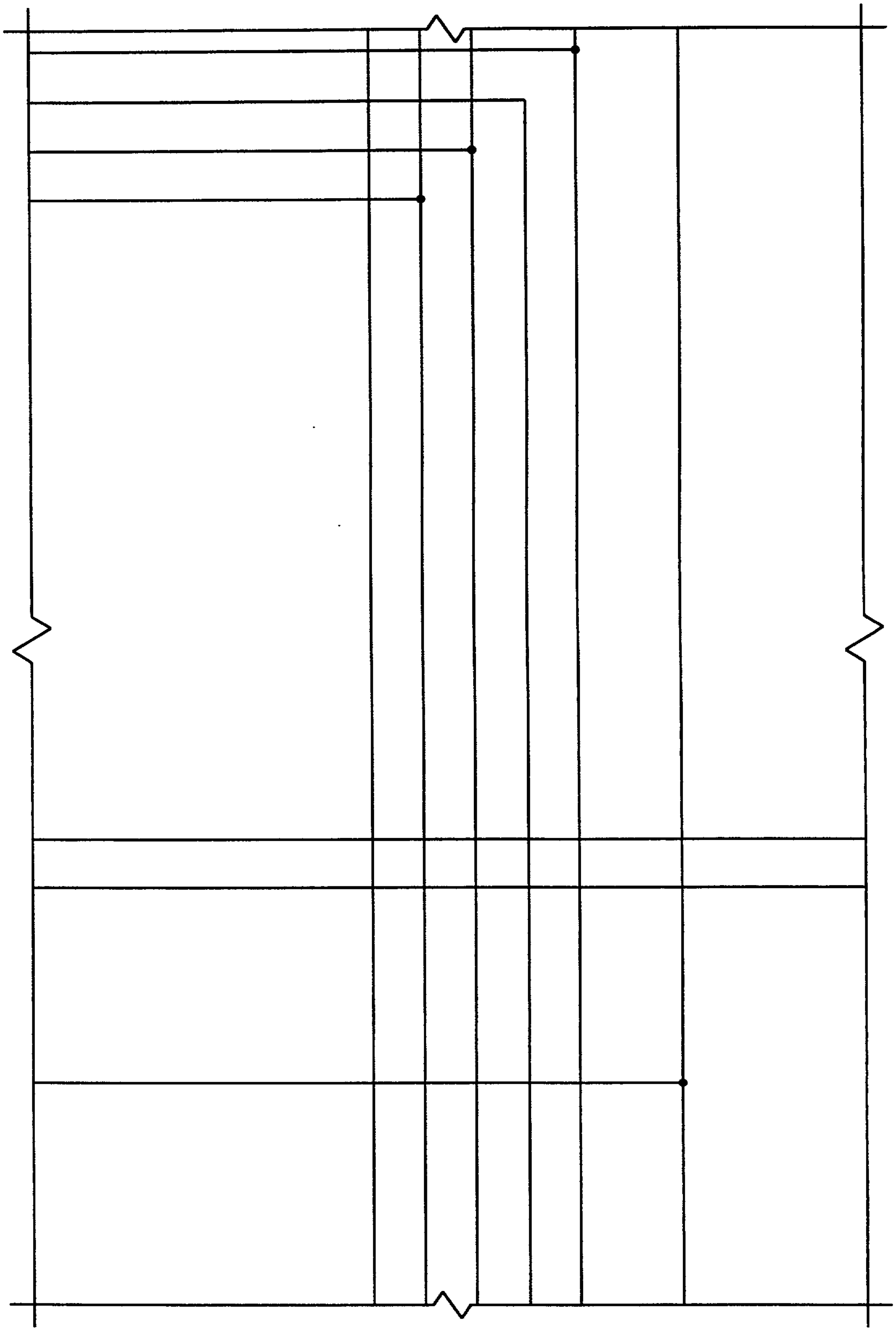


Fig 20EH

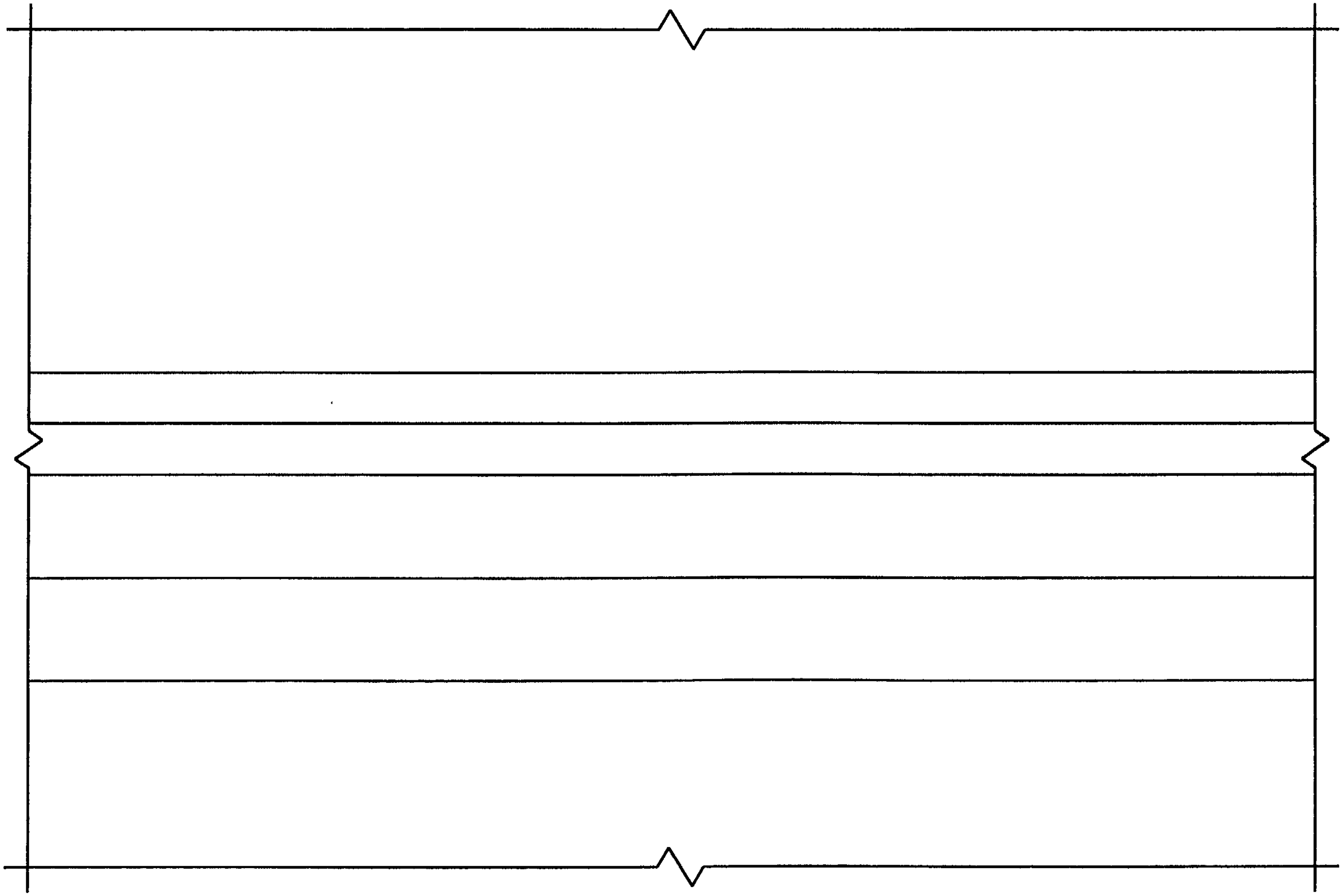


Fig 20EI

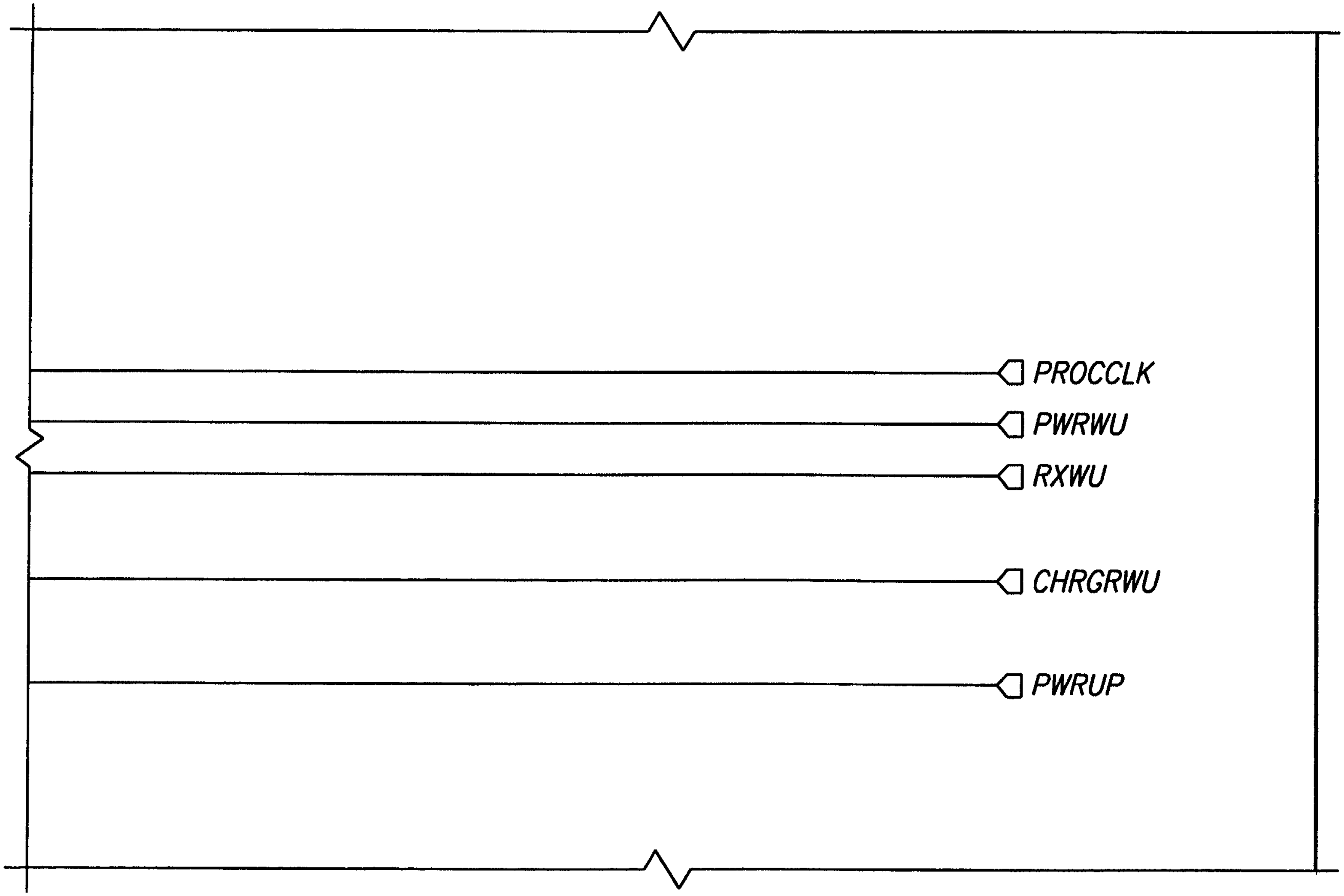


Fig 20EJ

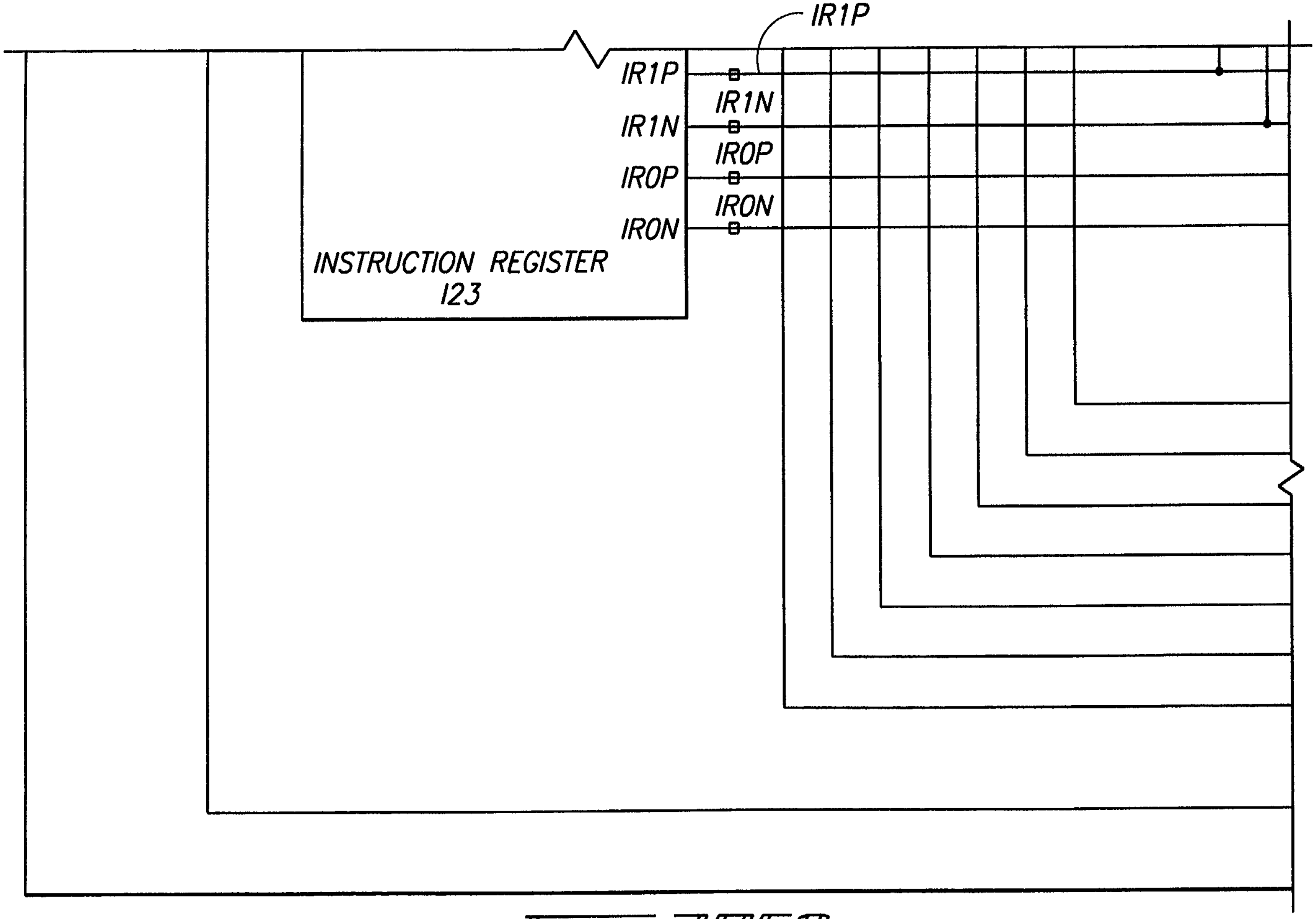

IR1P
IR1P
IR1N
IR0P
IR0N
IR1N
IR0P
IR0N
INSTRUCTION REGISTER
123

Fig 20FA

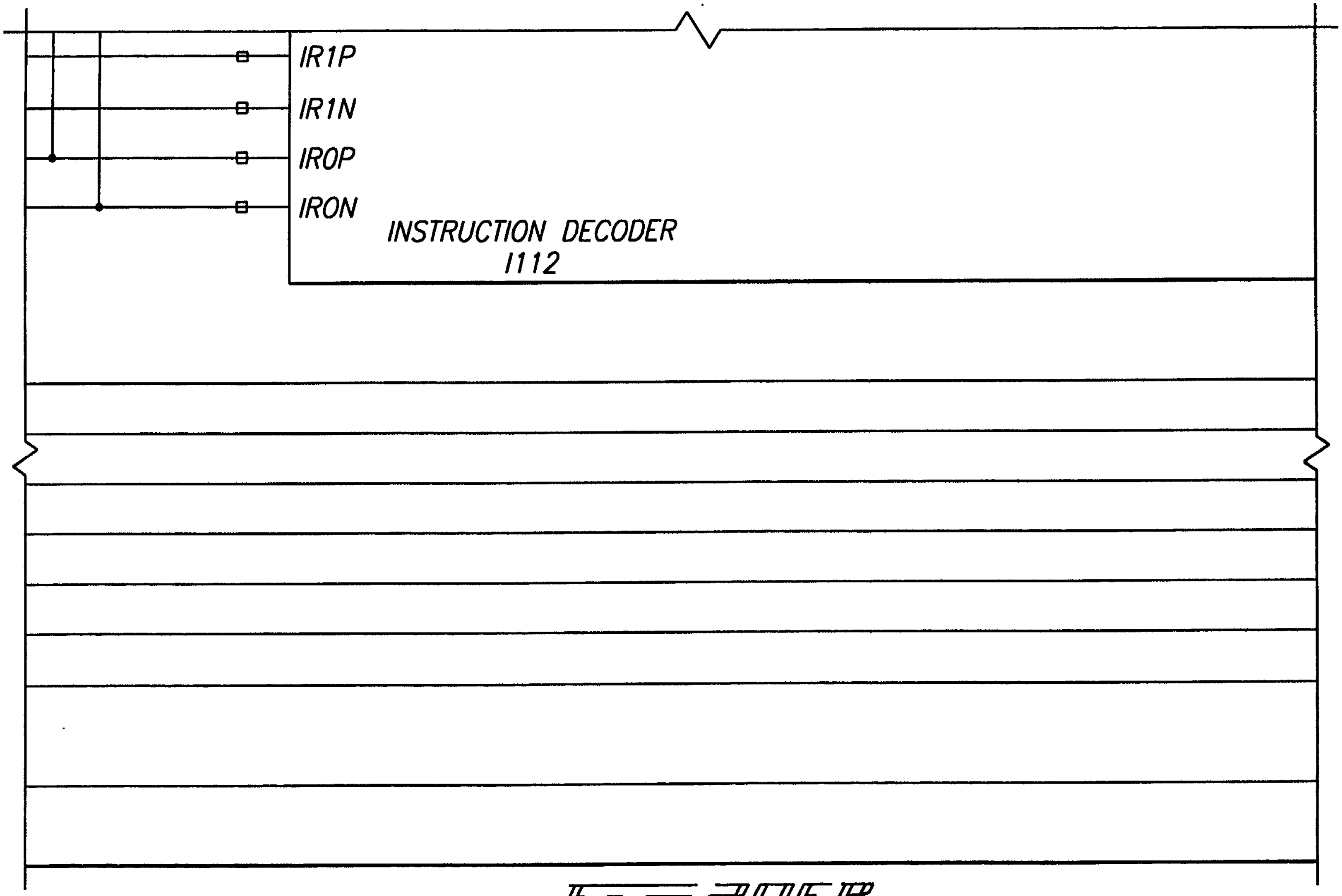


FIG 20FB

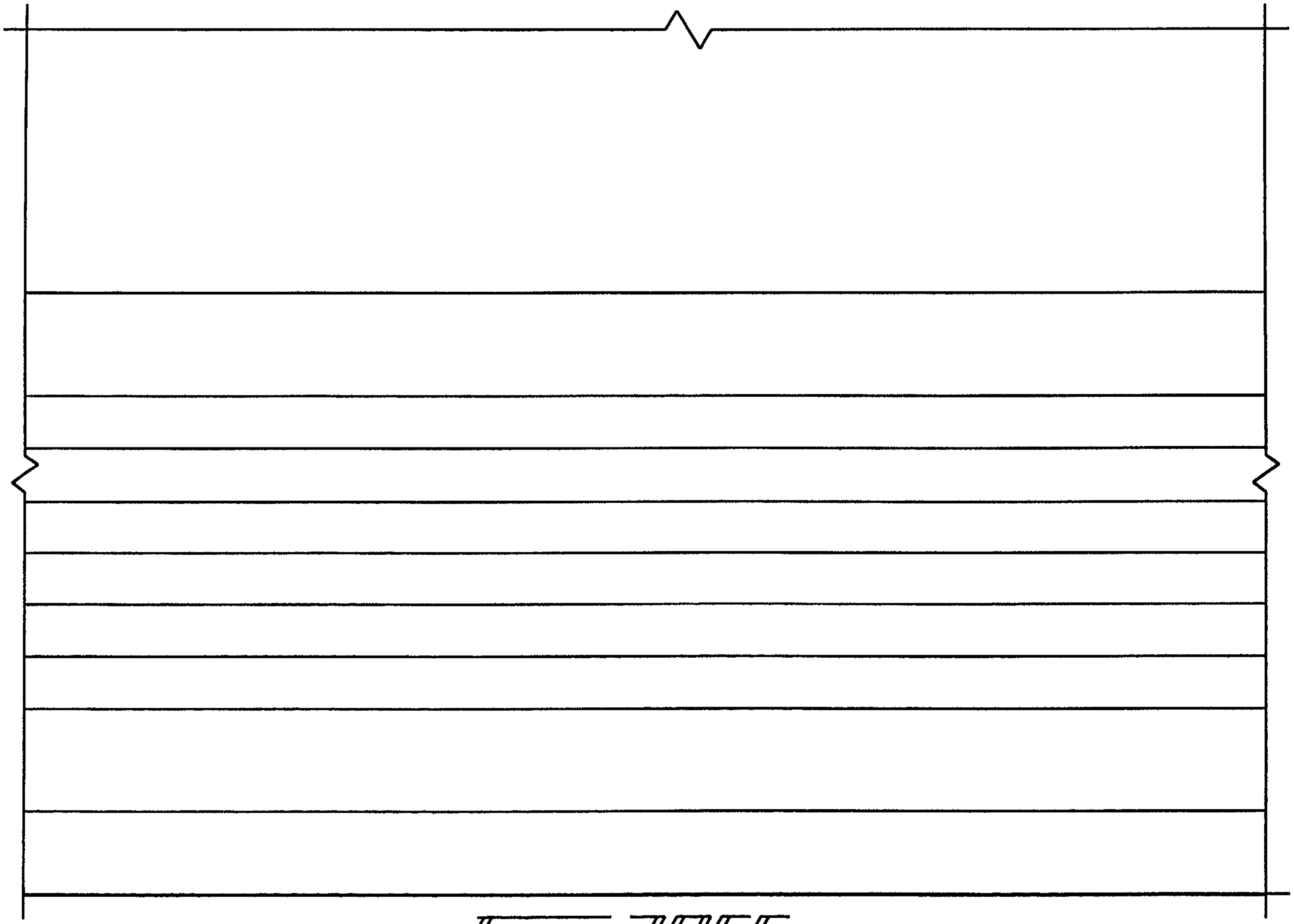


Fig 20FC

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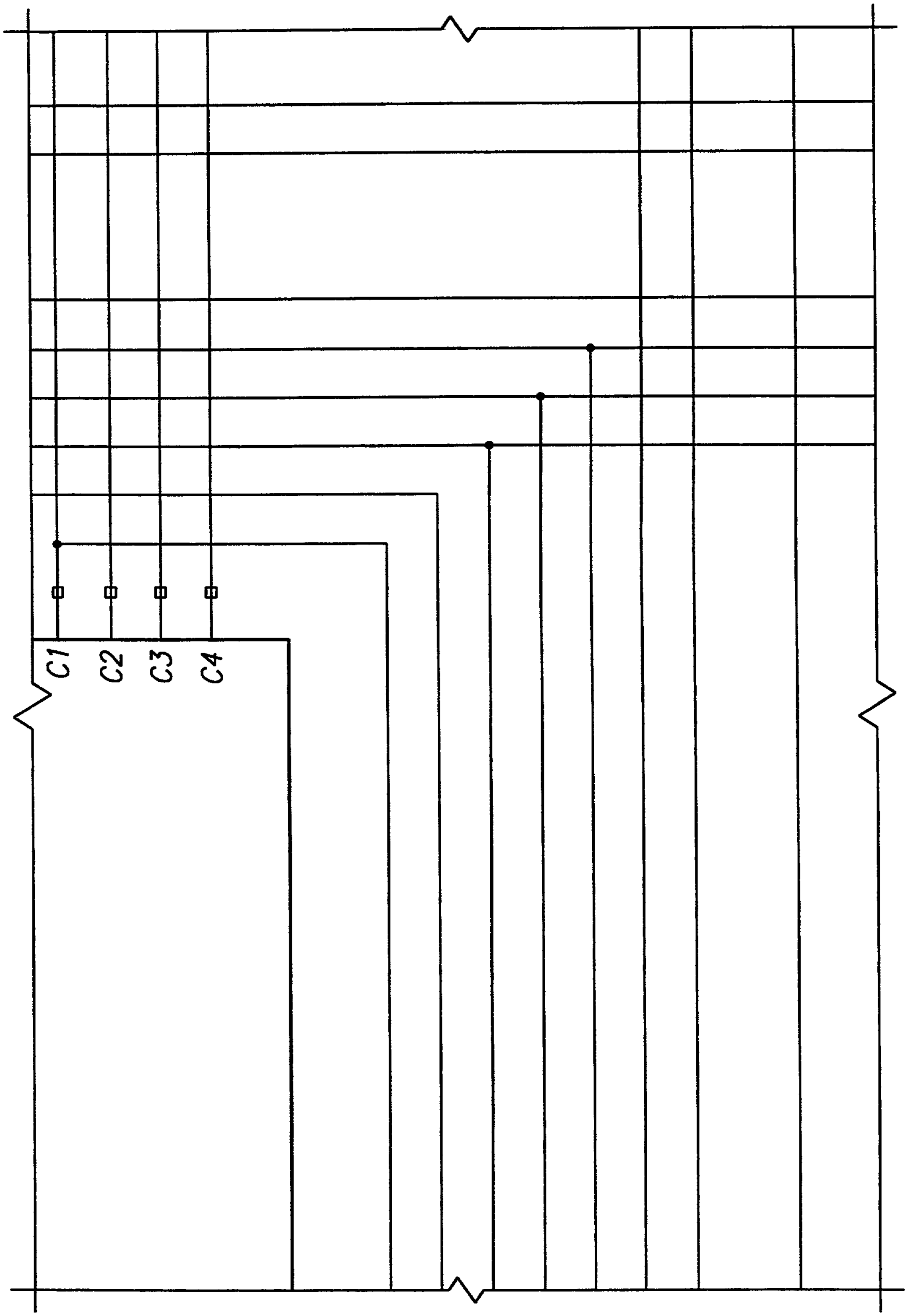

Fig 20F

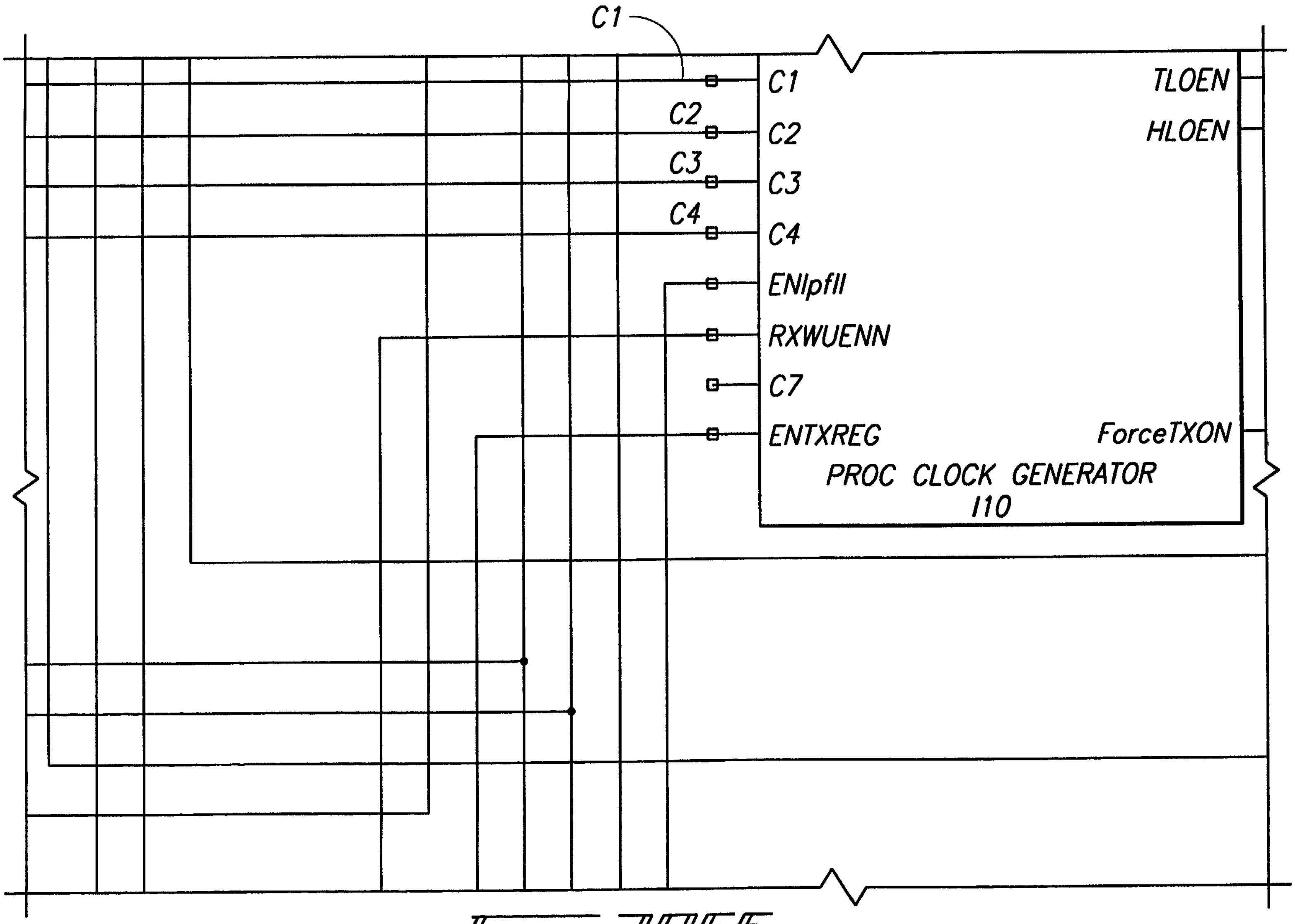
C1
C2
C3
C4
C1
C2
C3
C4
ENIpfll
RXWUENN
C7
ENTXREG
TLOEN
HLOEN
ForceTXON
PROC CLOCK GENERATOR
I10

Fig 20FE

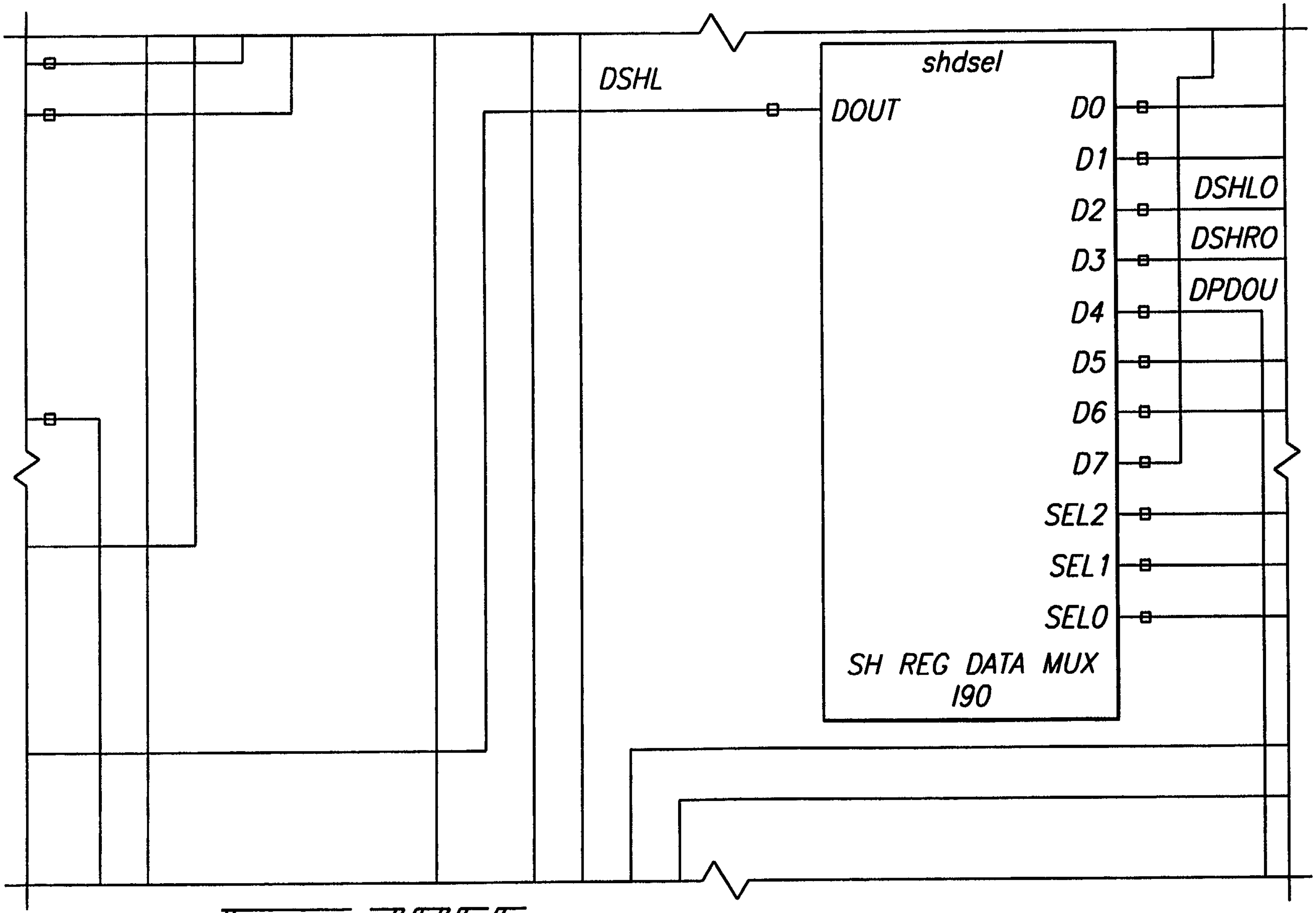
shdsel
DOUT
D0
D1
D2
D3
D4
D5
D6
D7
SEL2
SEL1
SEL0
SH REG DATA MUX
I90
DSHL
DSHLO
DSHRO
DPDOU

Fig 20FF

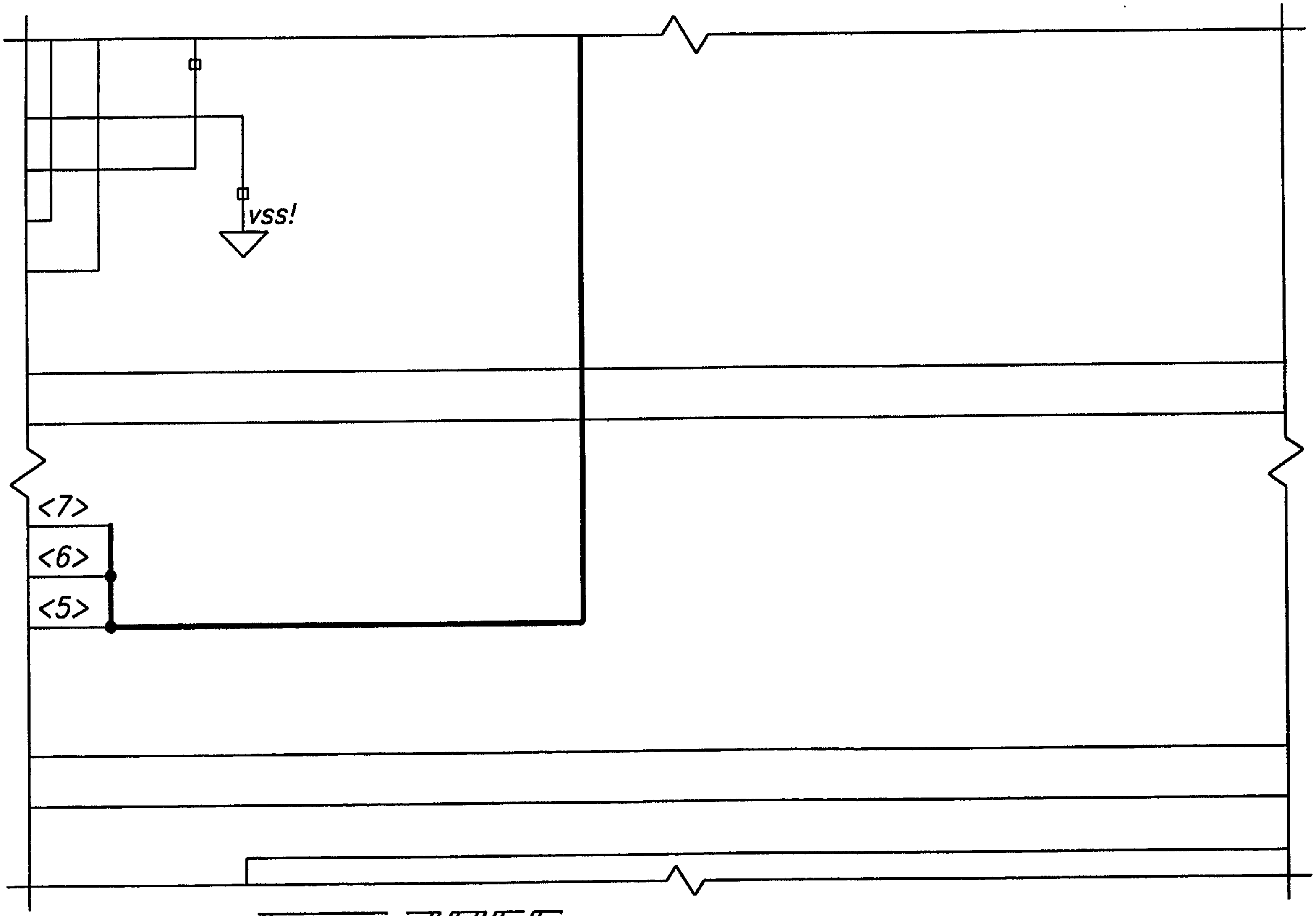

Fig 20FG

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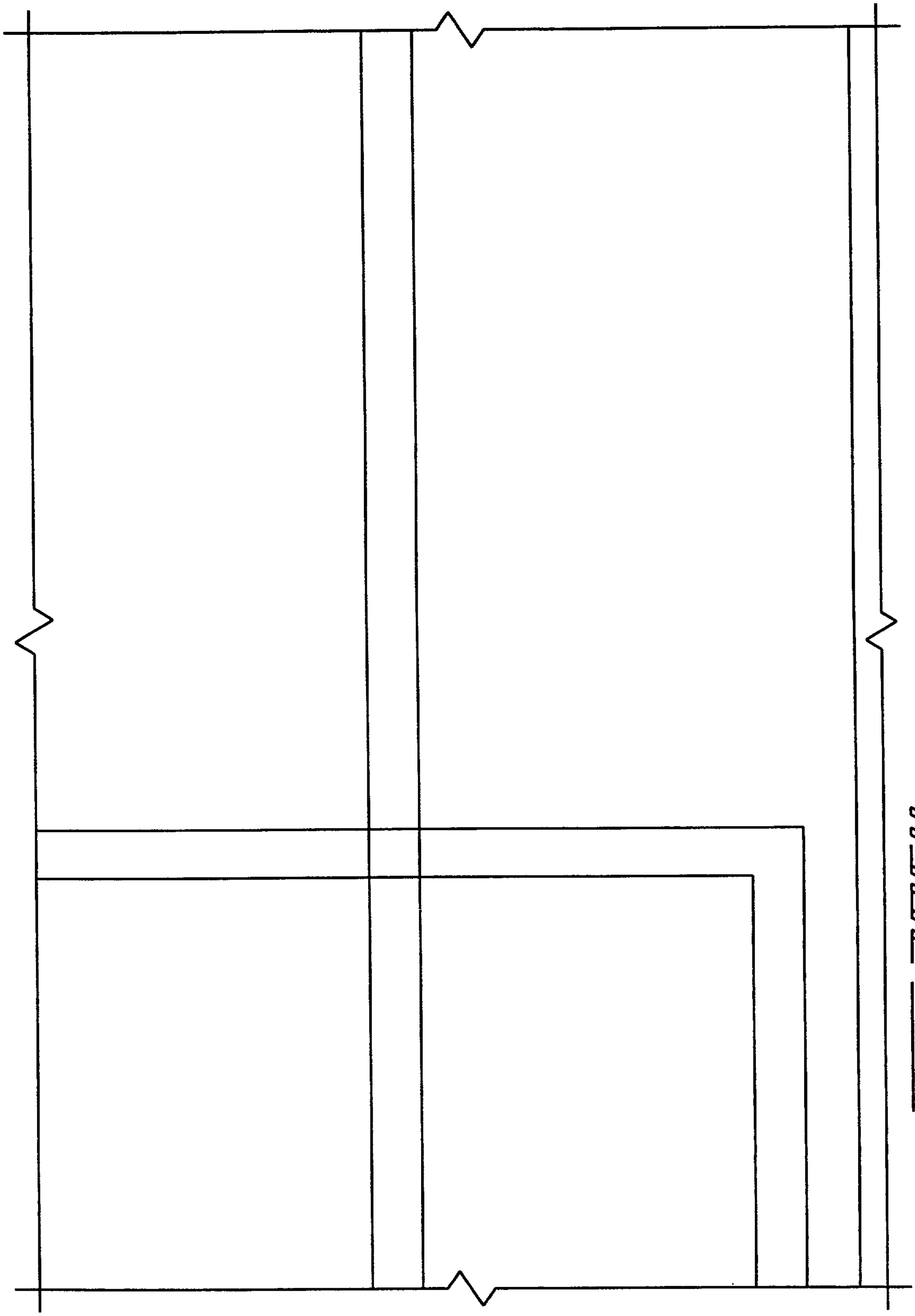

FIG 20FH

09822063.061101

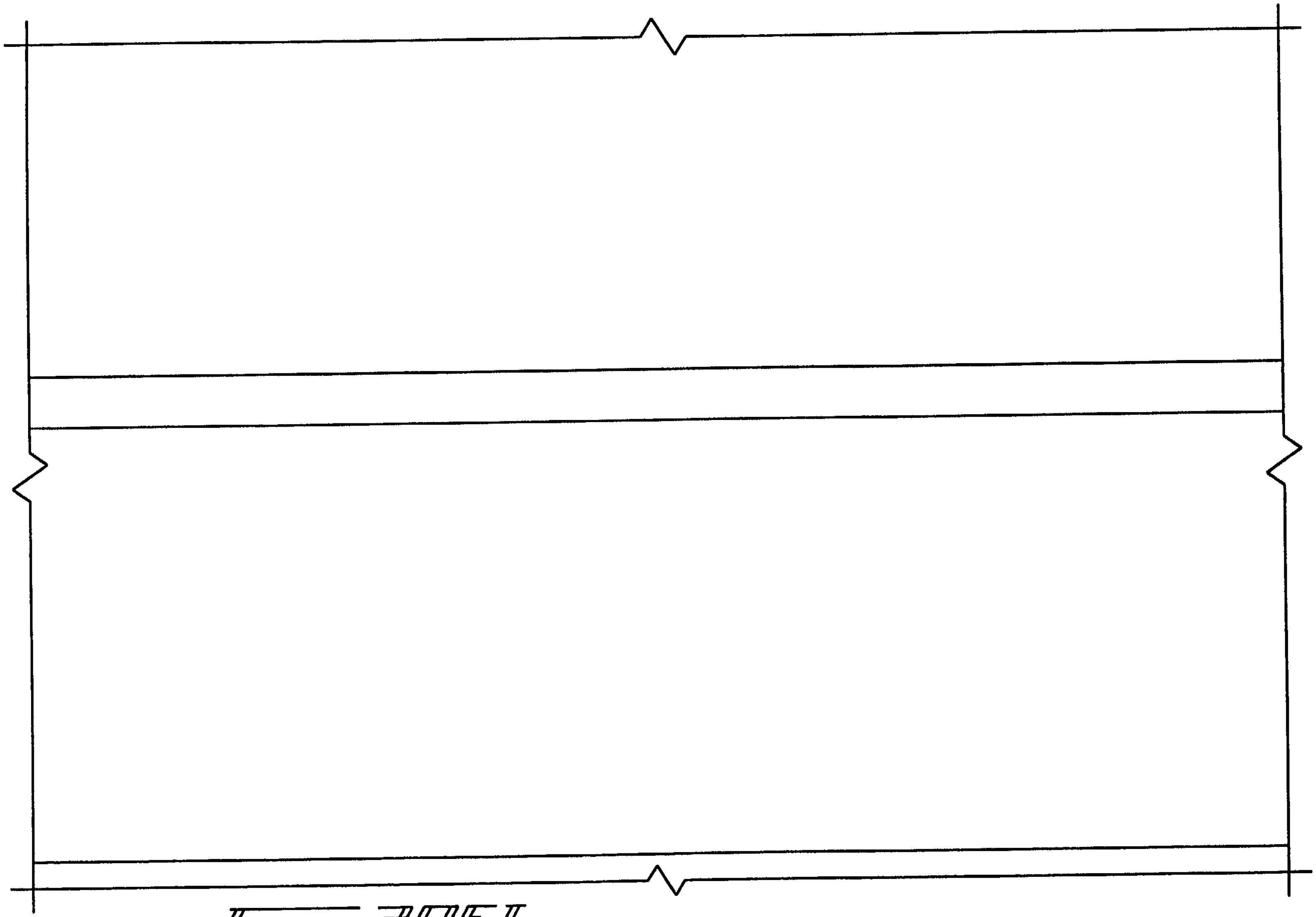

Fig 20FI

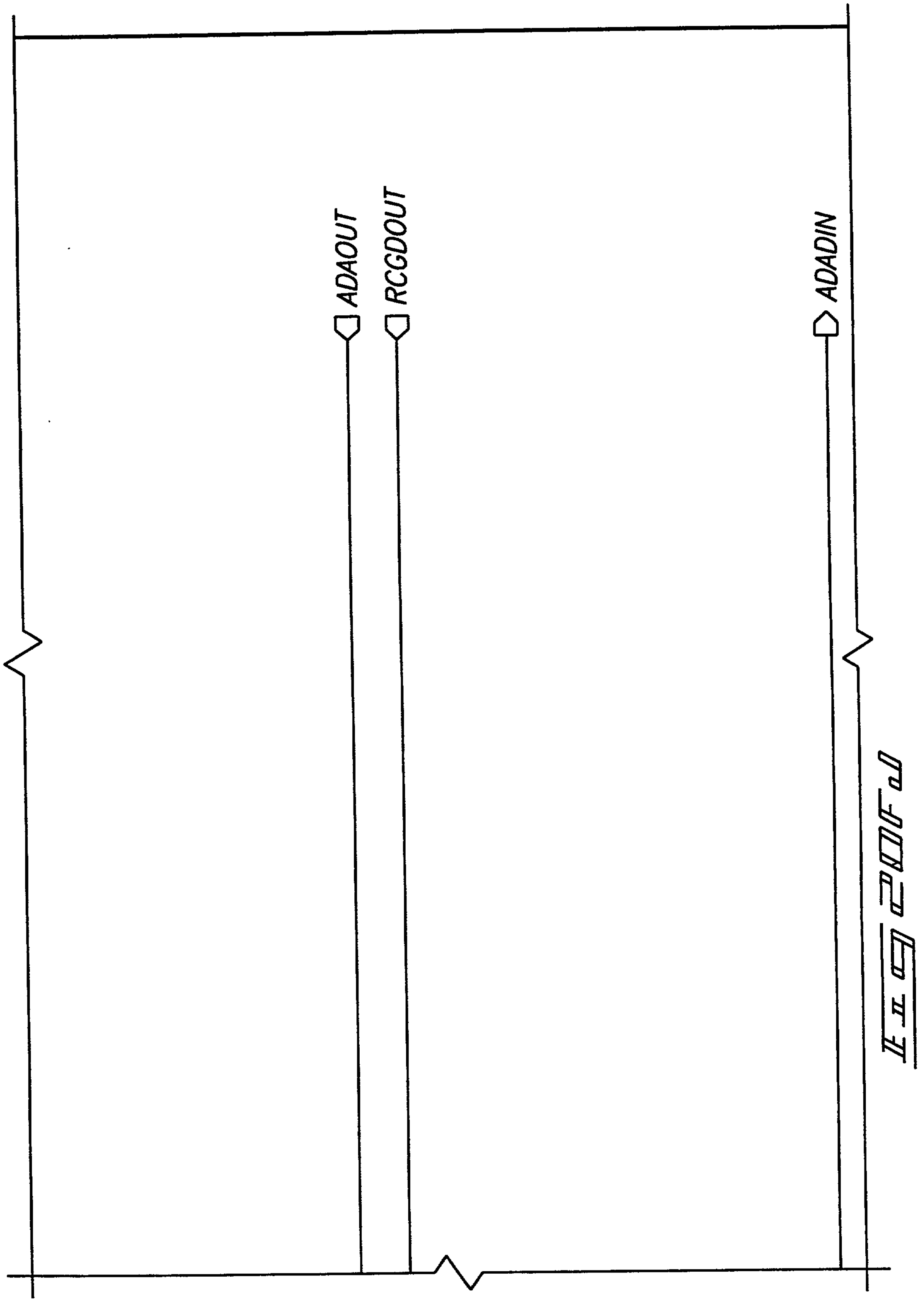

FIG 20J

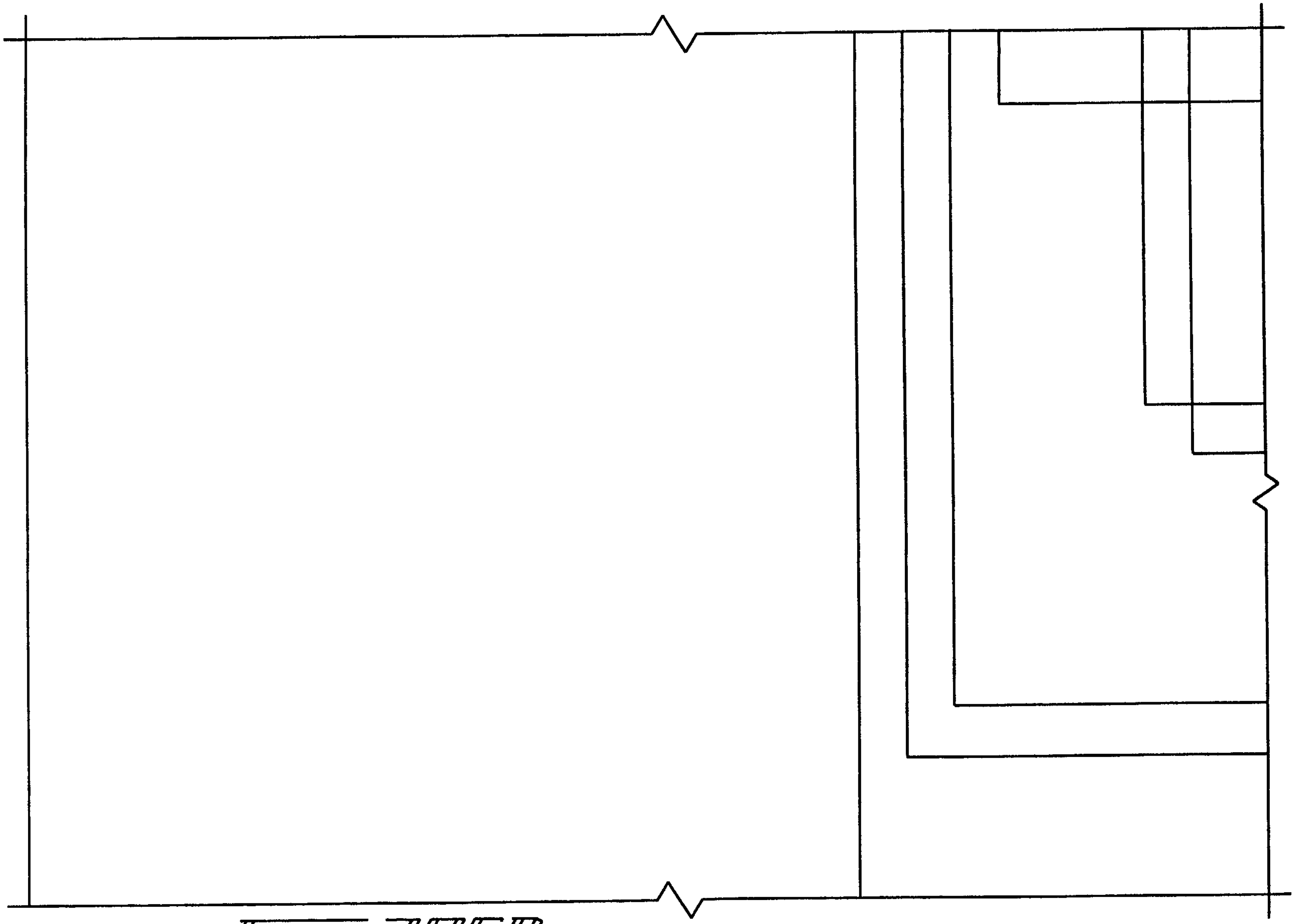

FIG 206D

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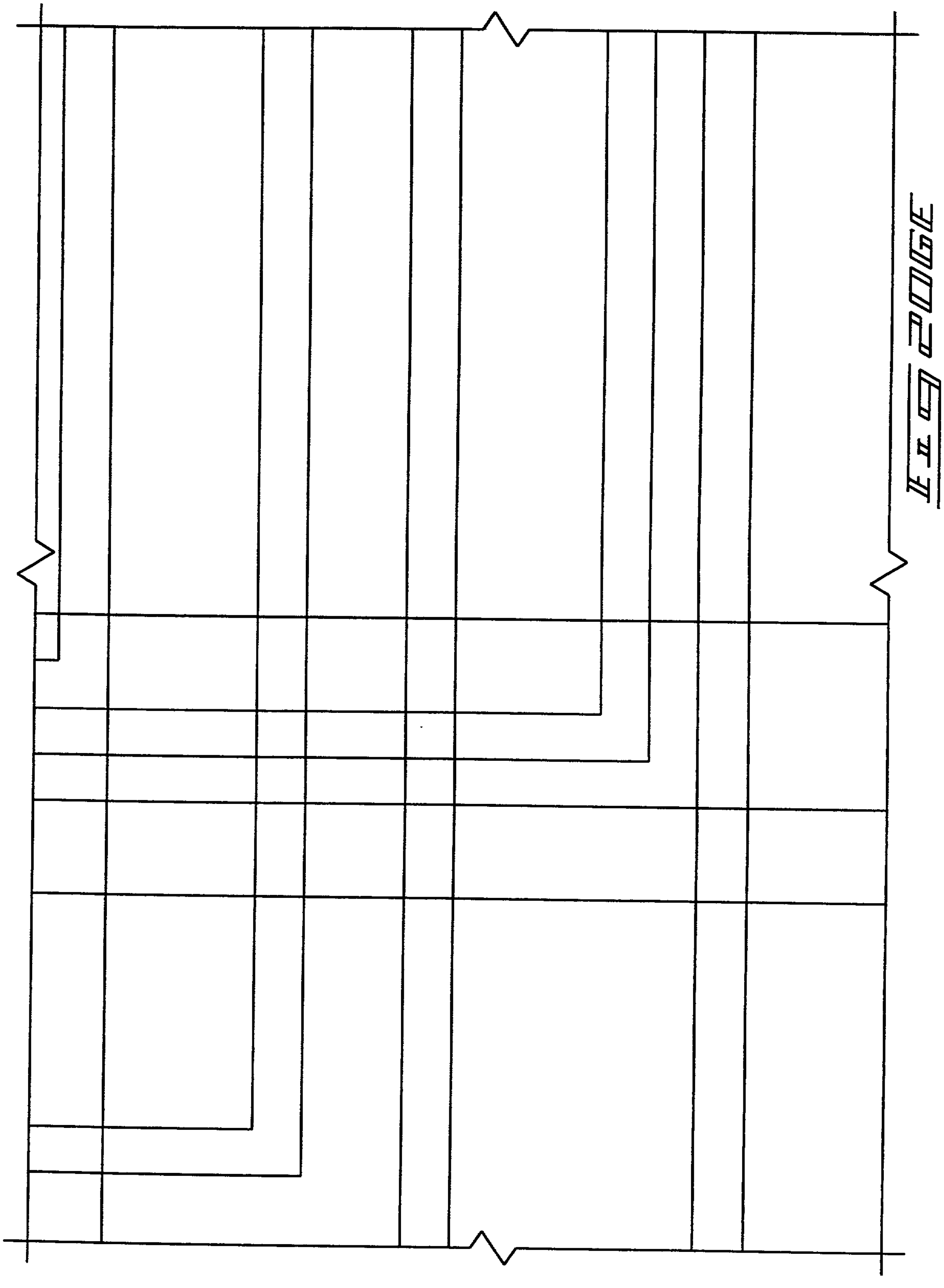

FIG 20GE

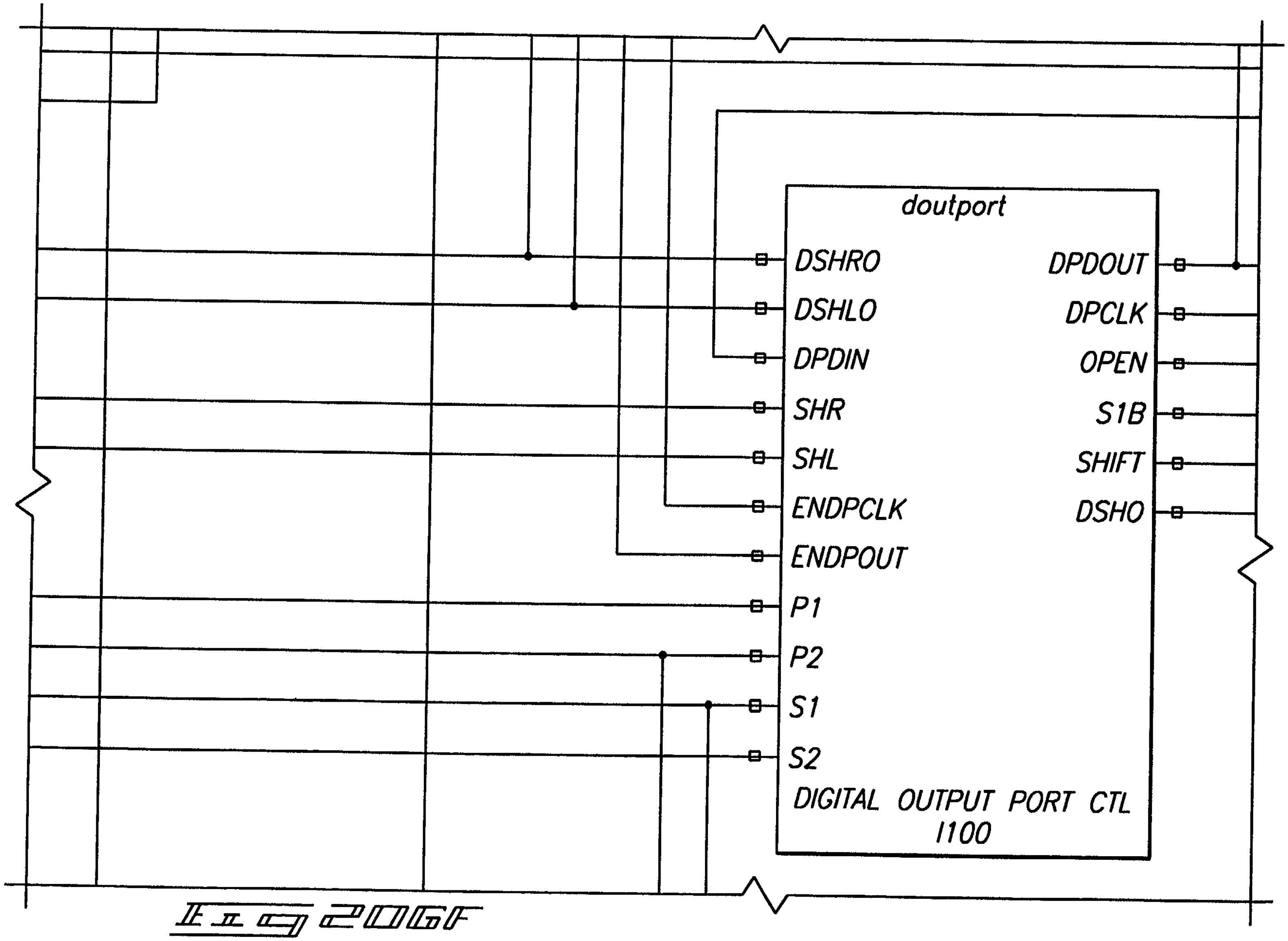
doutport
DSHRO
DSHLO
DPDIN
SHR
SHL
ENDPCLK
ENDPOUT
P1
P2
S1
S2
DPDOUT
DPCLK
OPEN
S1B
SHIFT
DSHO
DIGITAL OUTPUT PORT CTL
I100

FIG 20GF

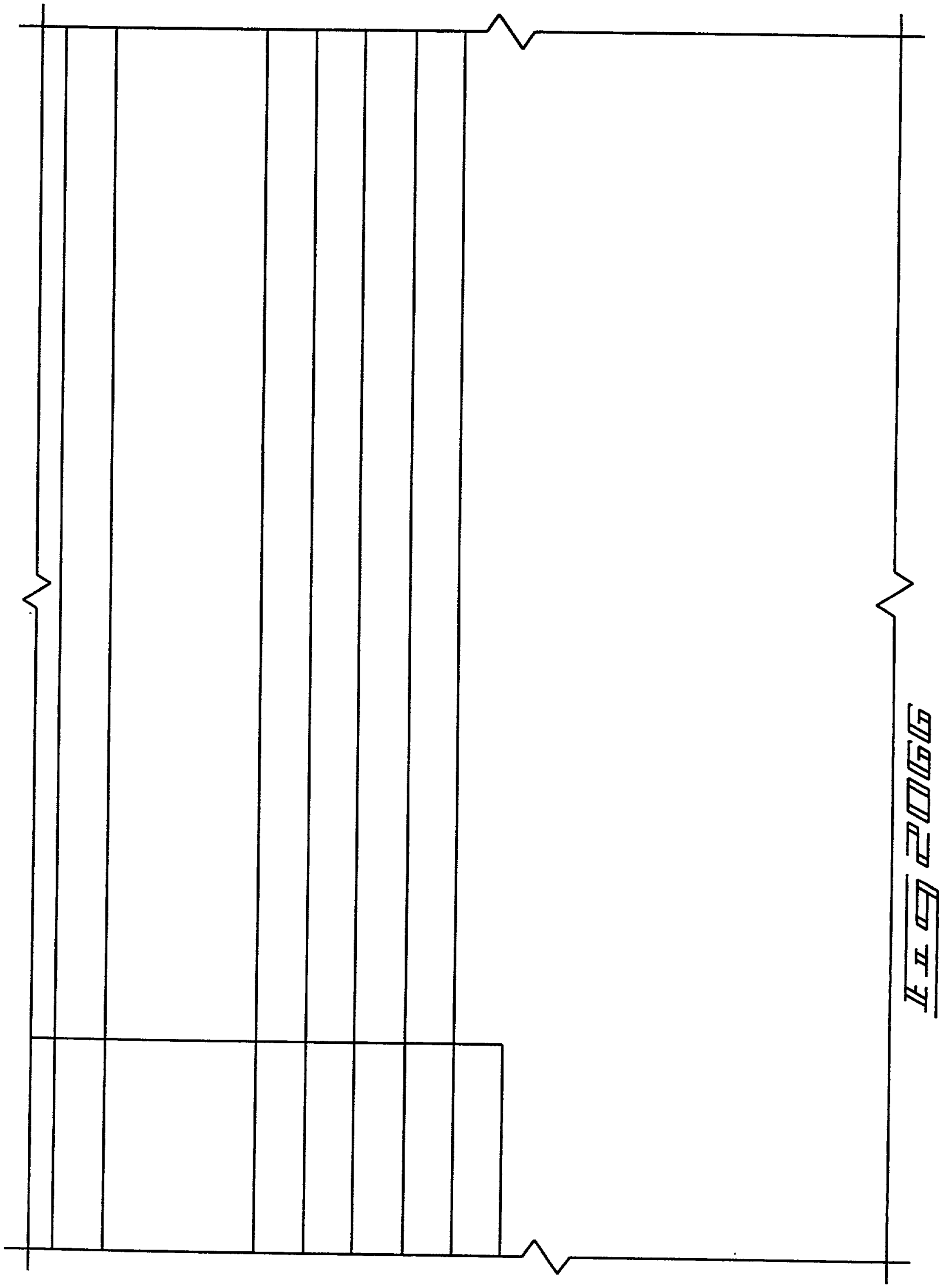

Fig 20G

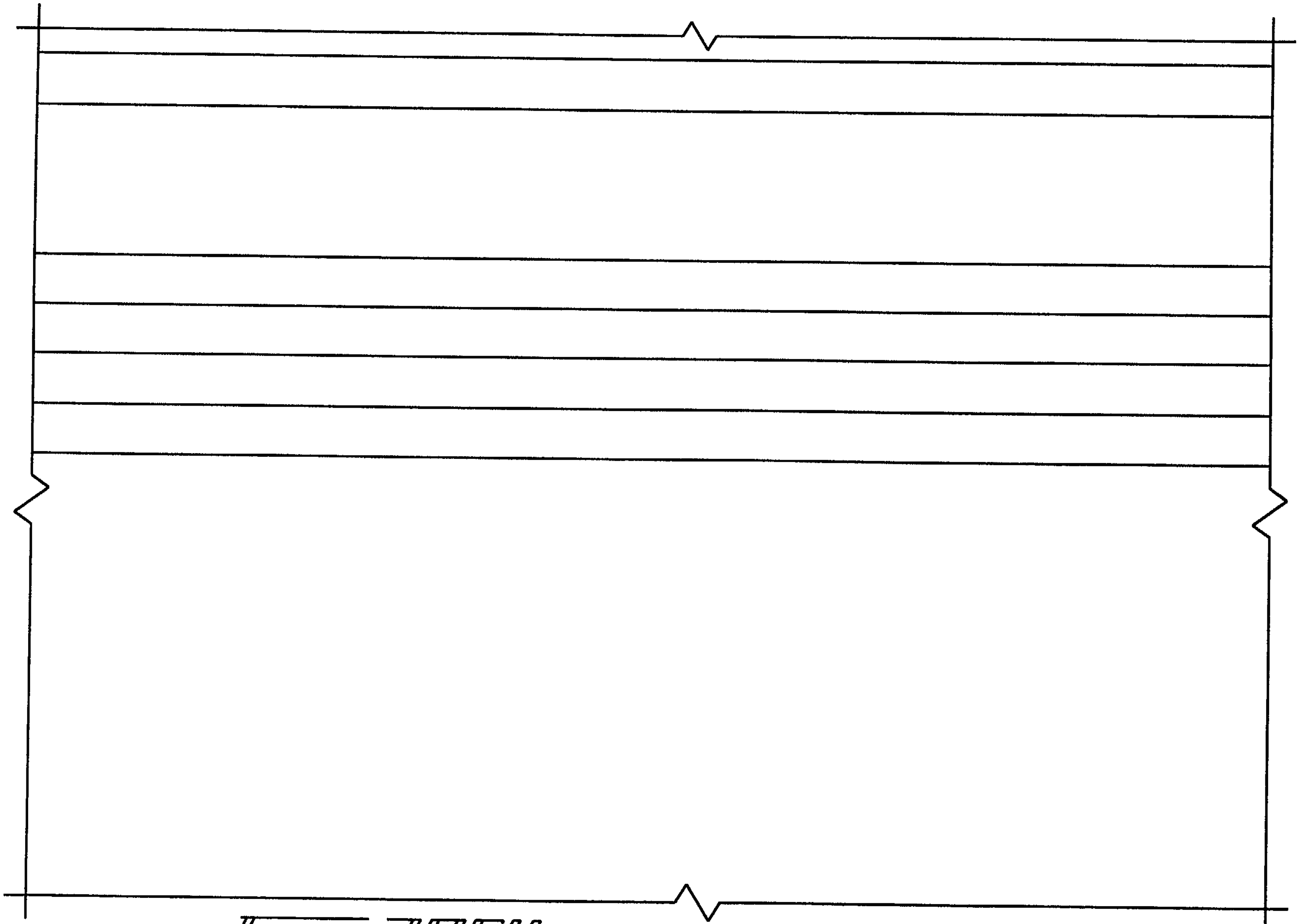

FIG 206H

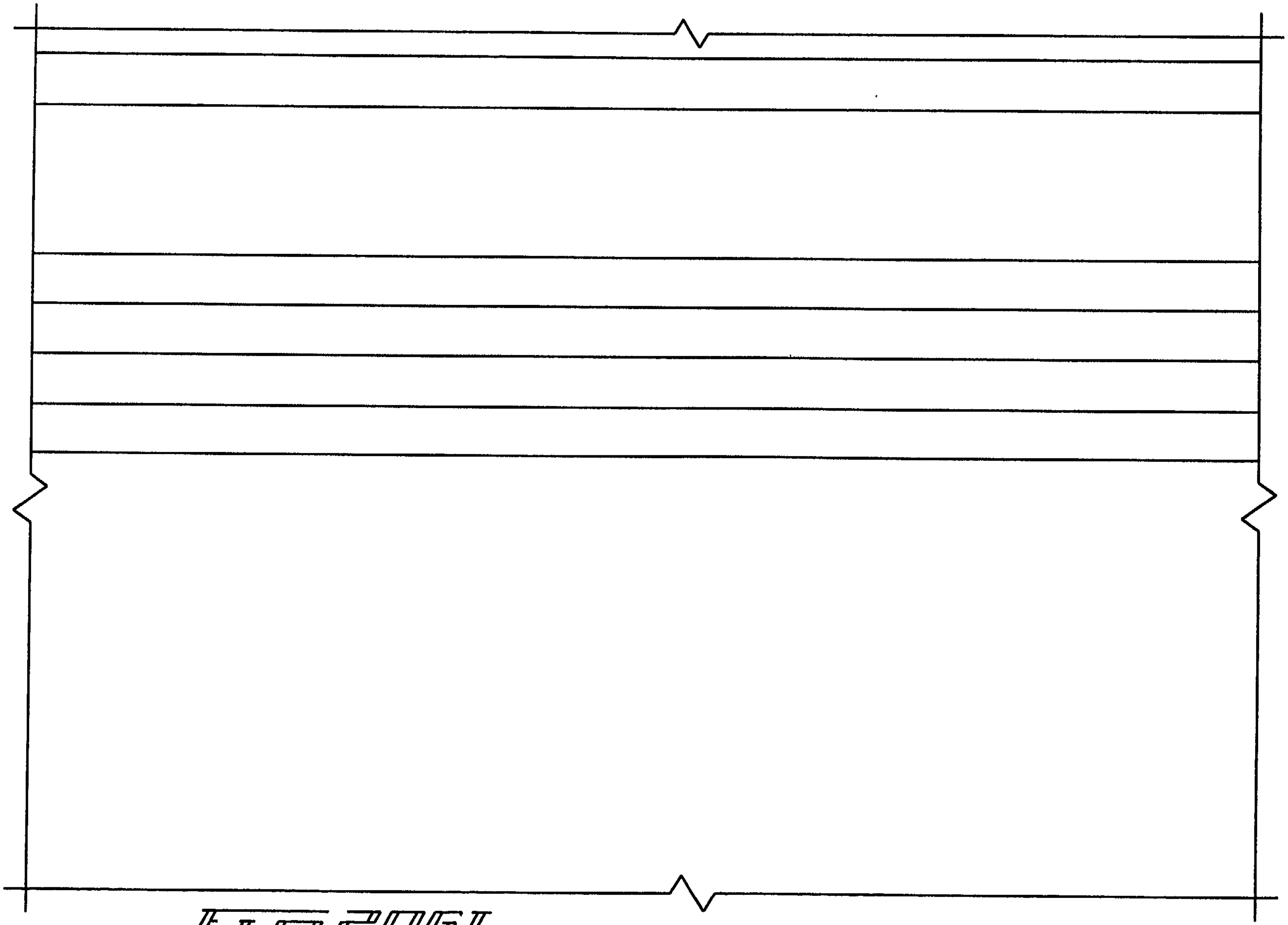

FIG 20GI

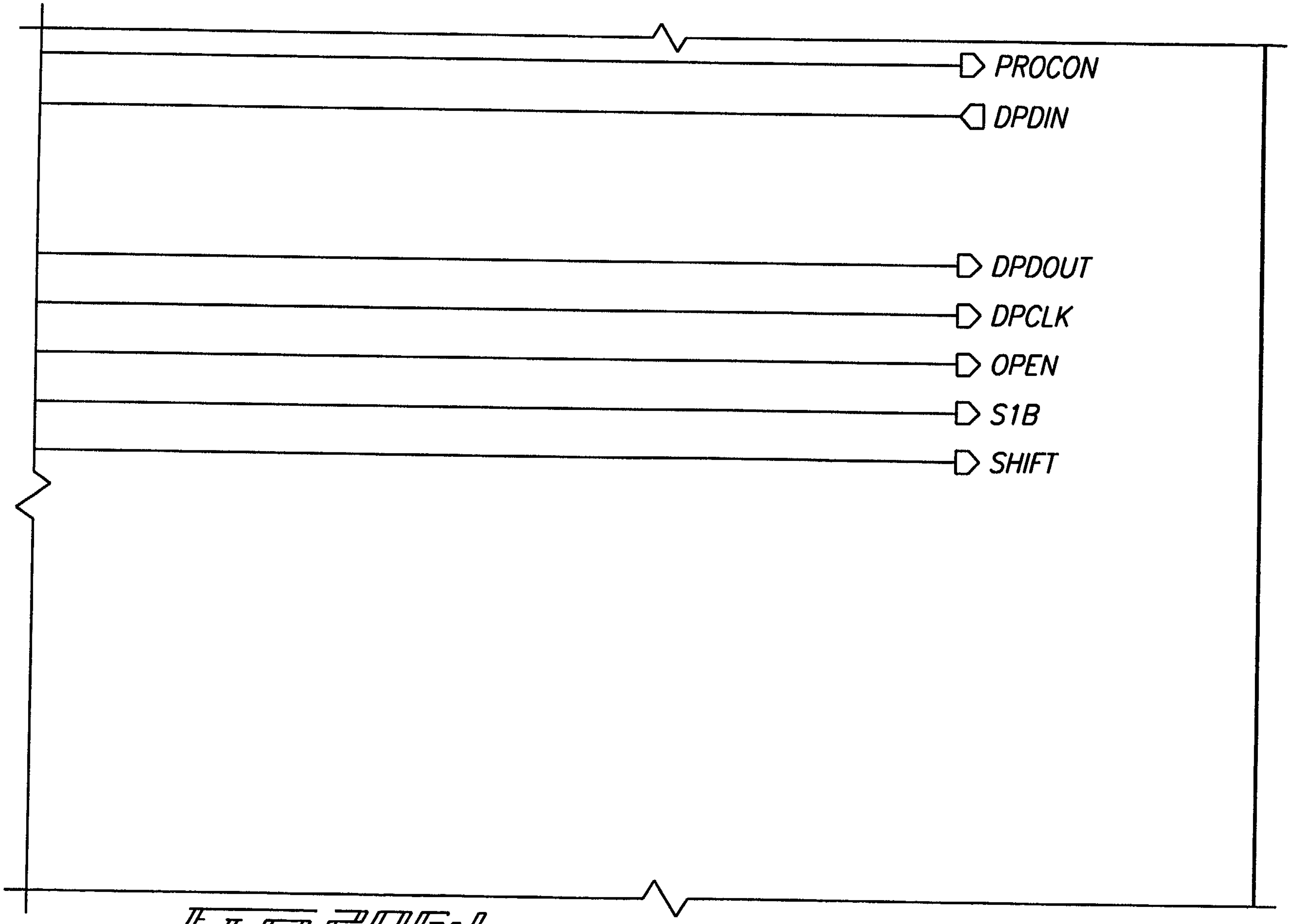

Fig 20J

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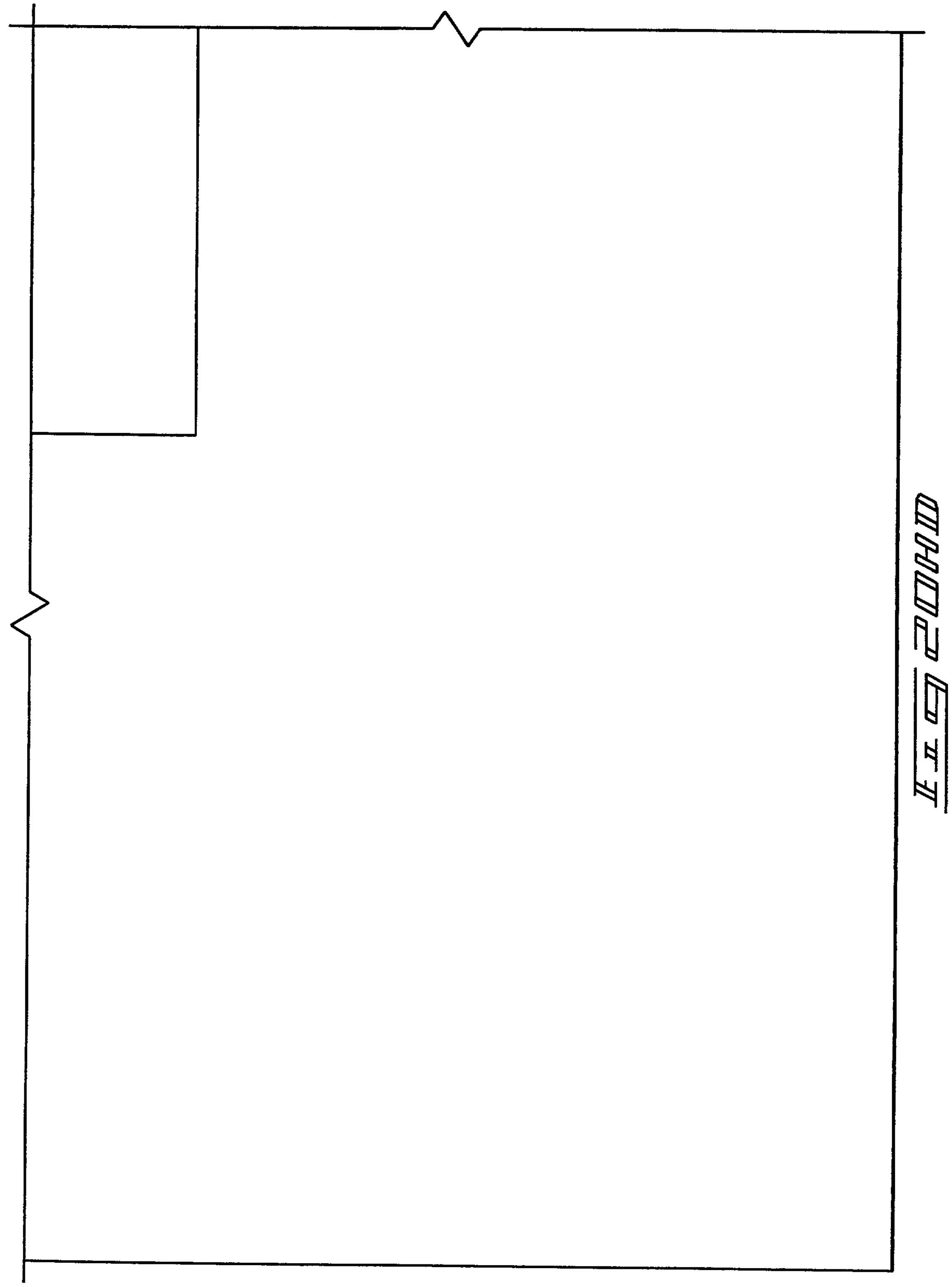

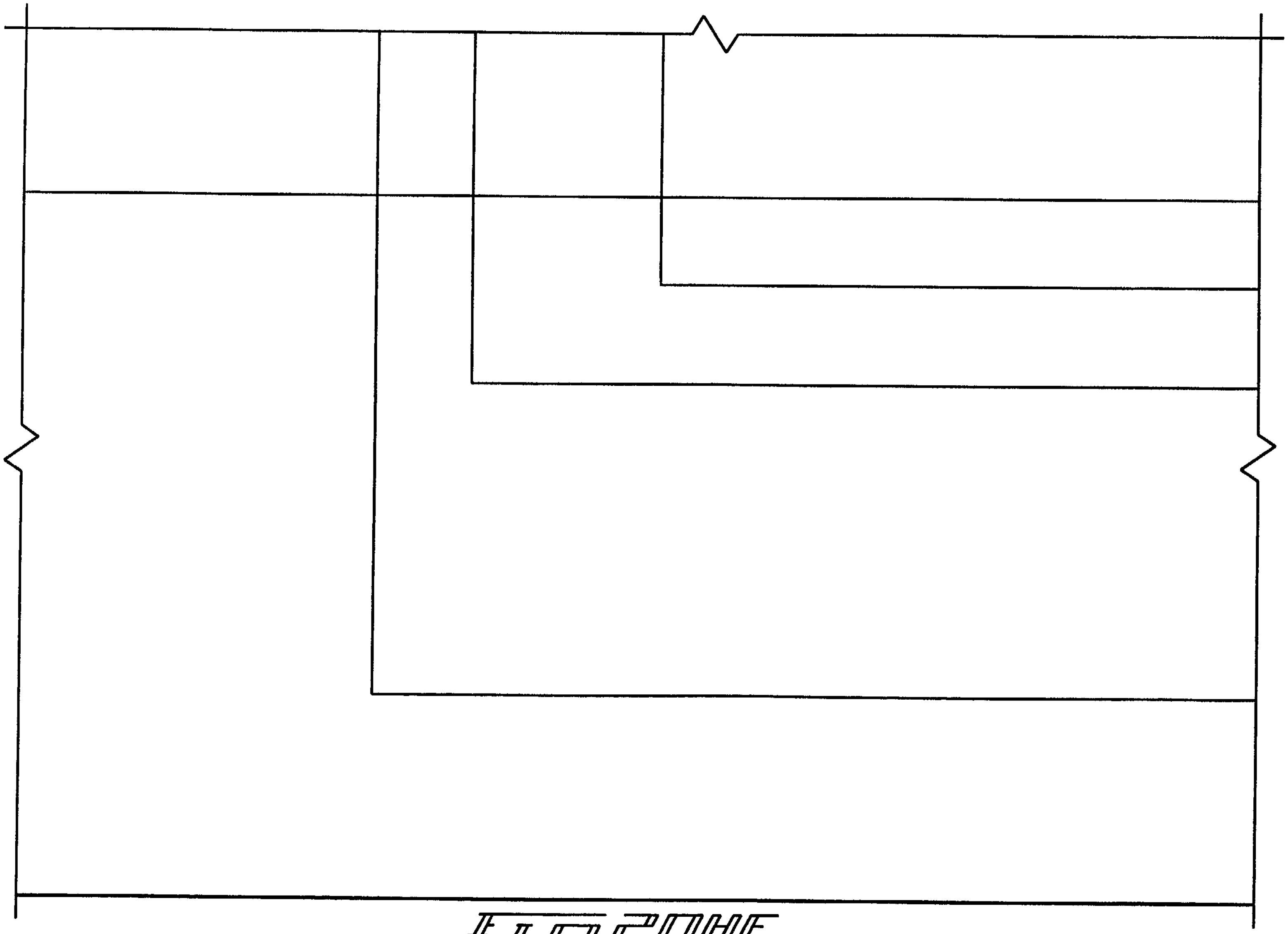

FIG 20HE

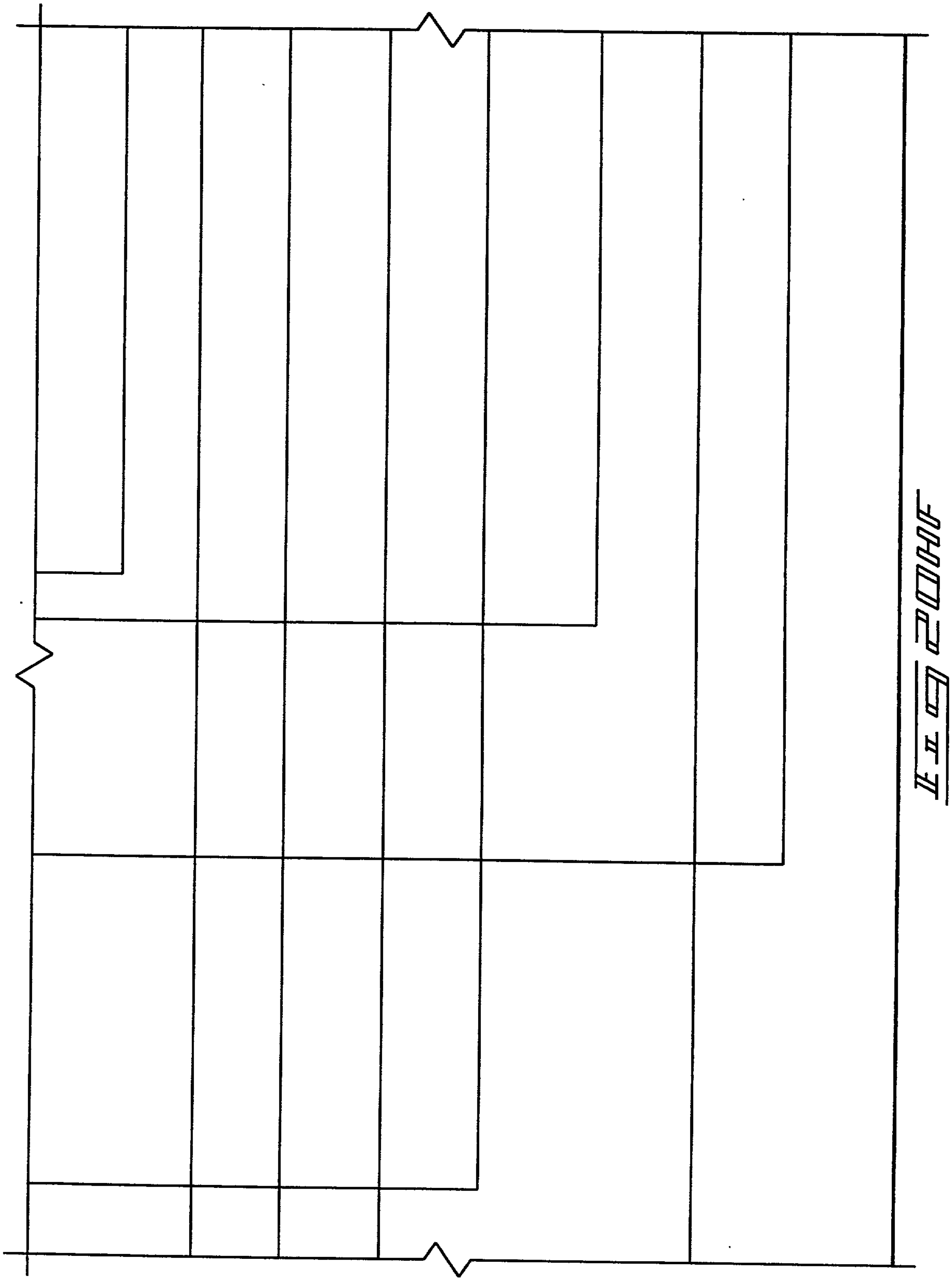

FIG 20HF

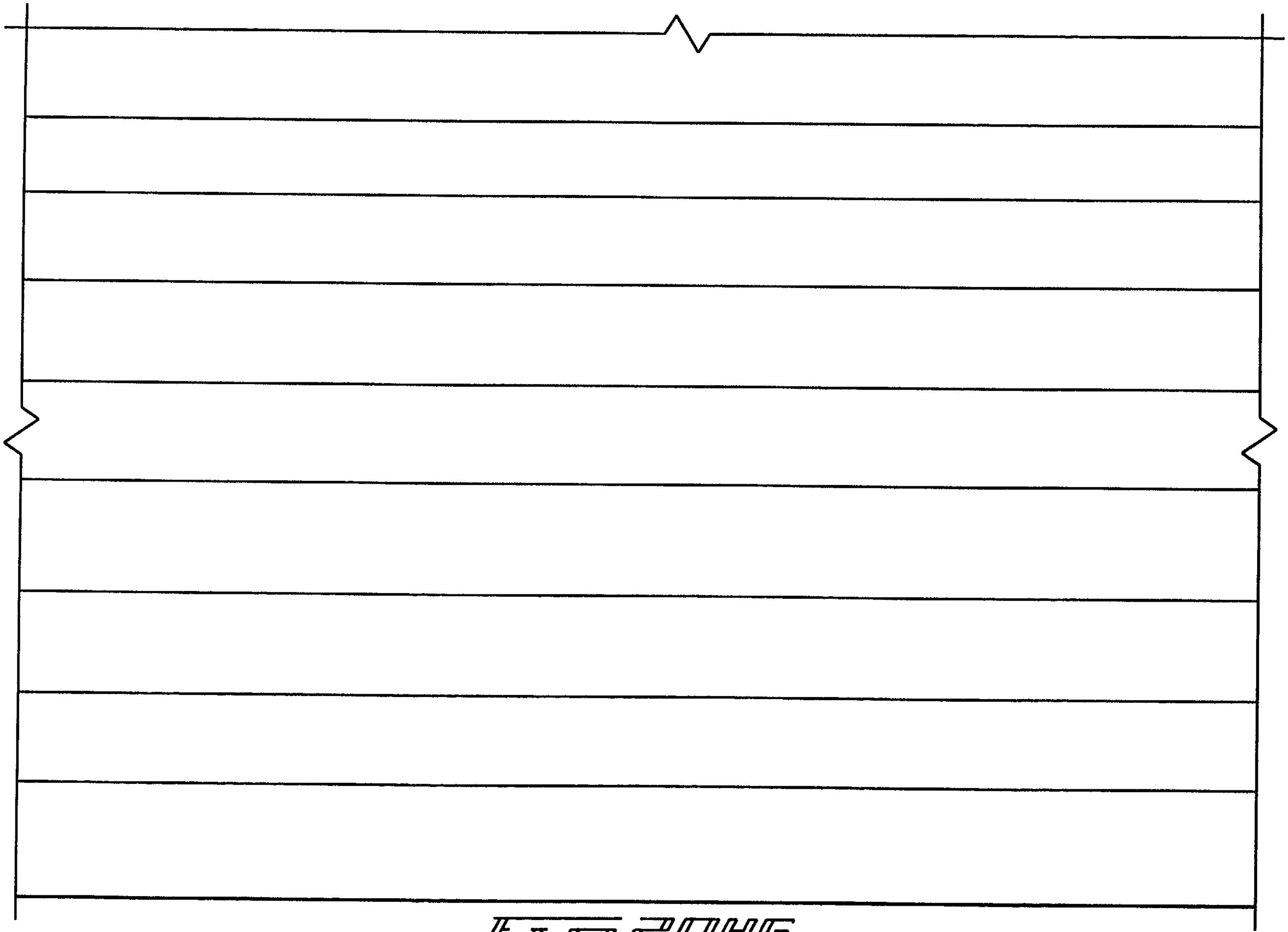

FIG 20HG

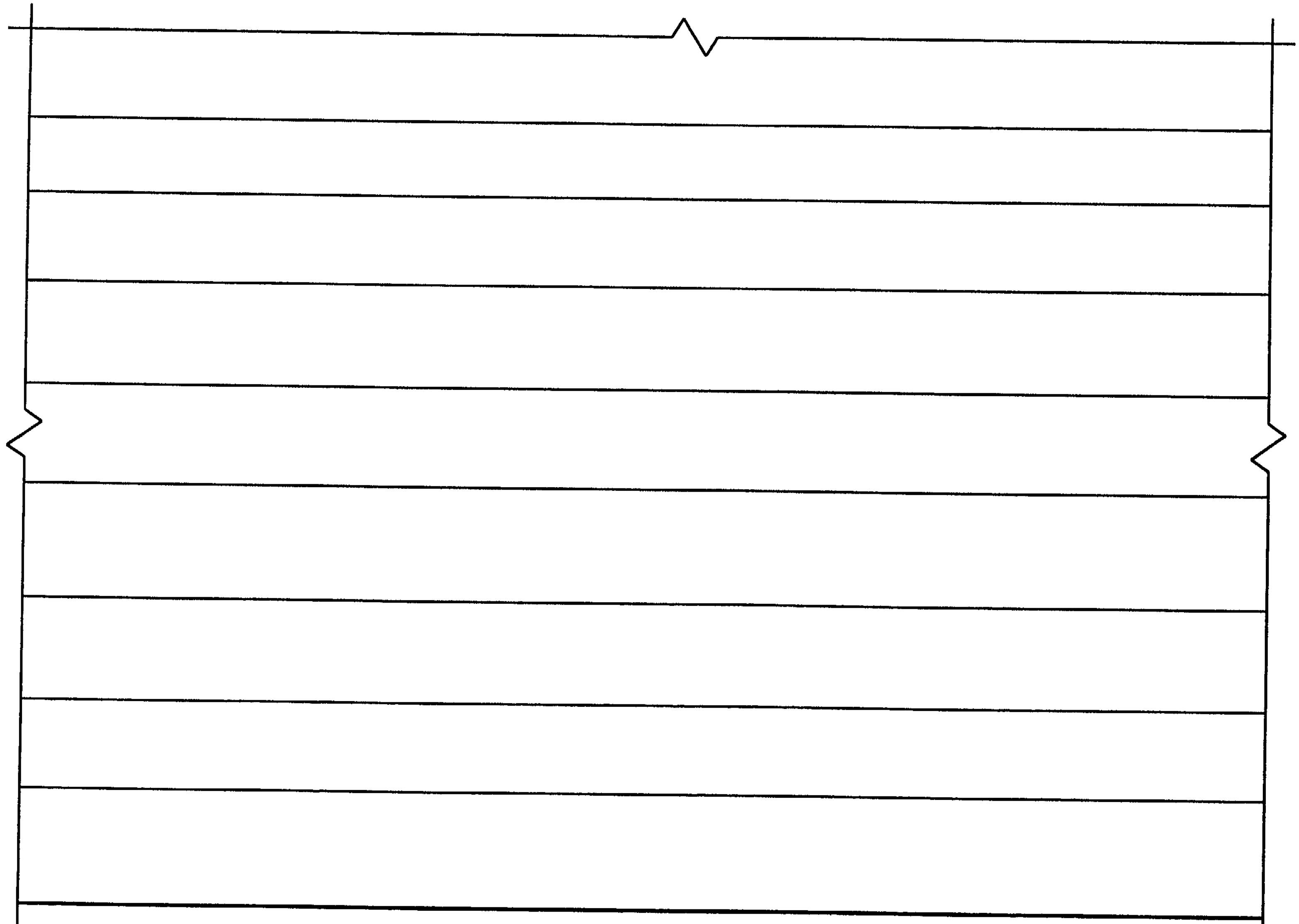

FIG. 20HH

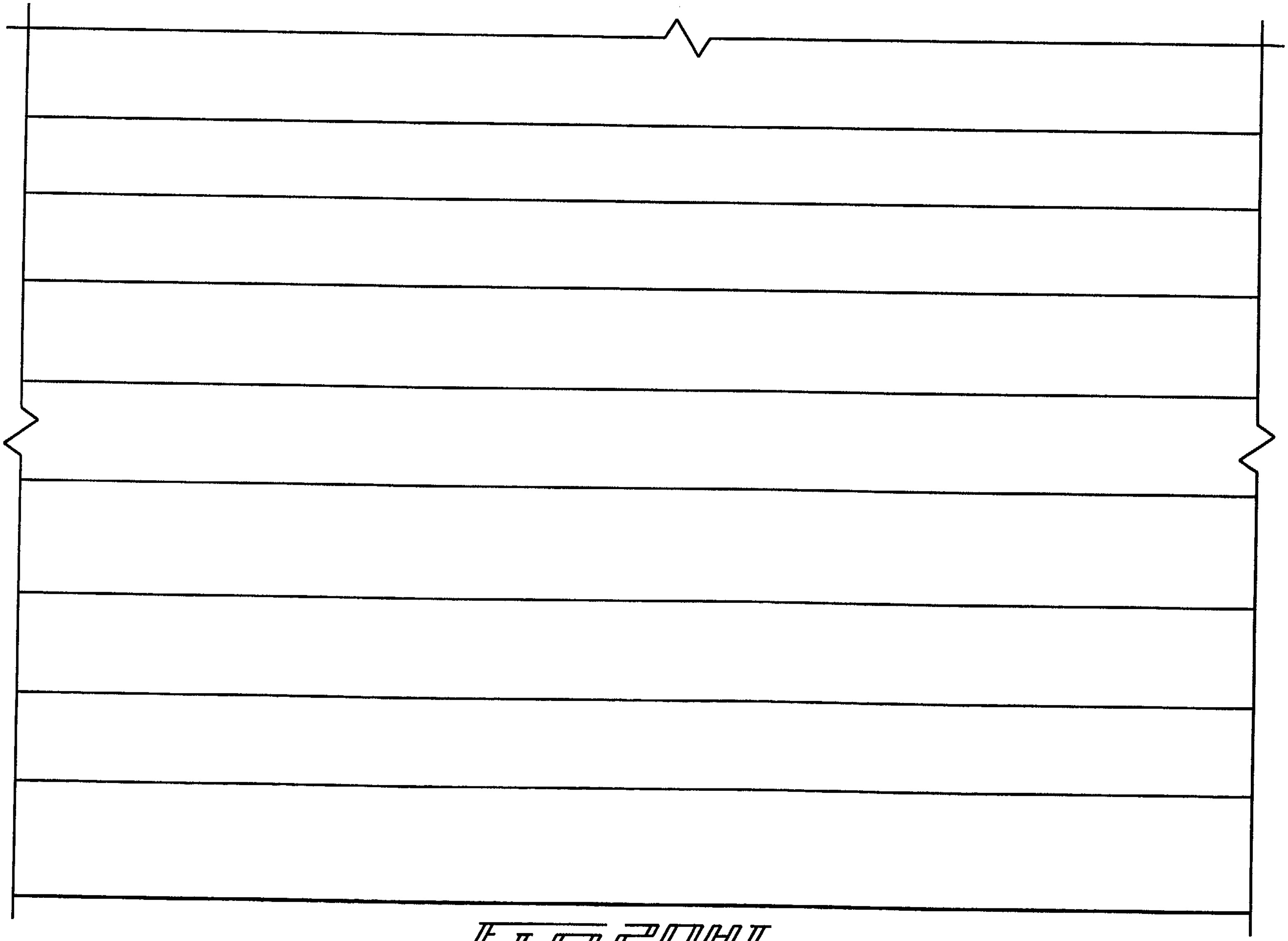

FIG 2041

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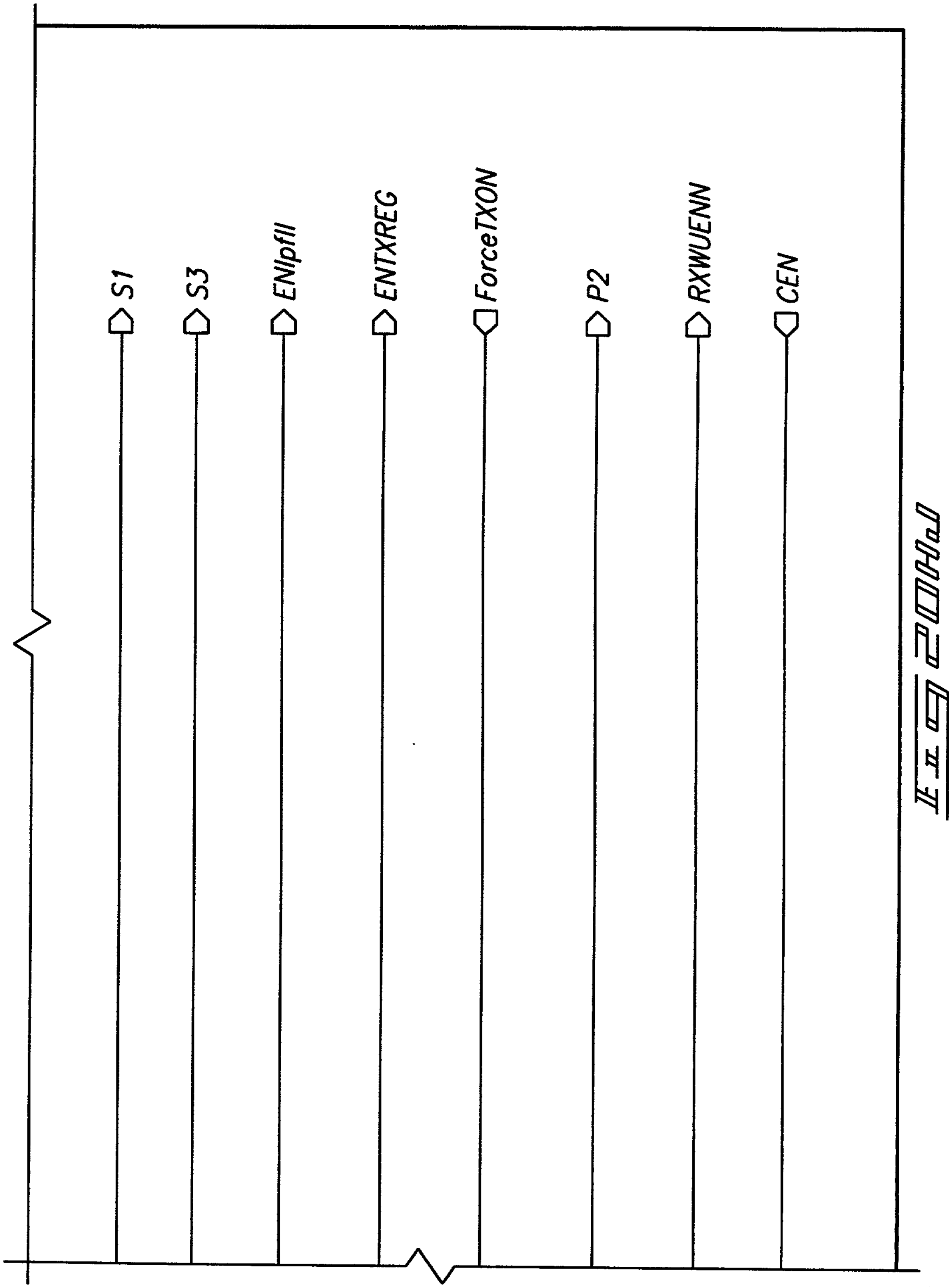

Fig 20HJ

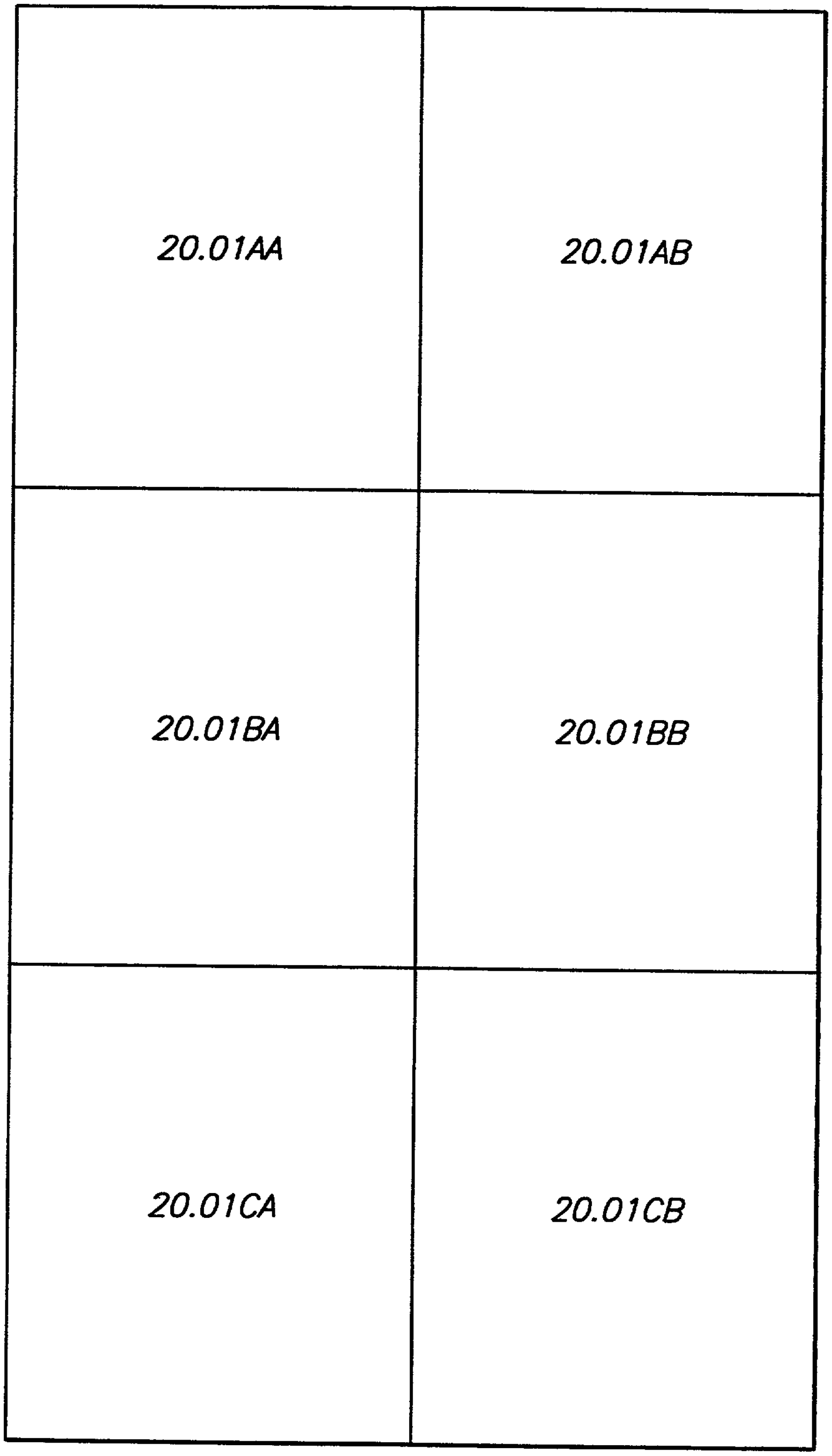

Fig 20.01

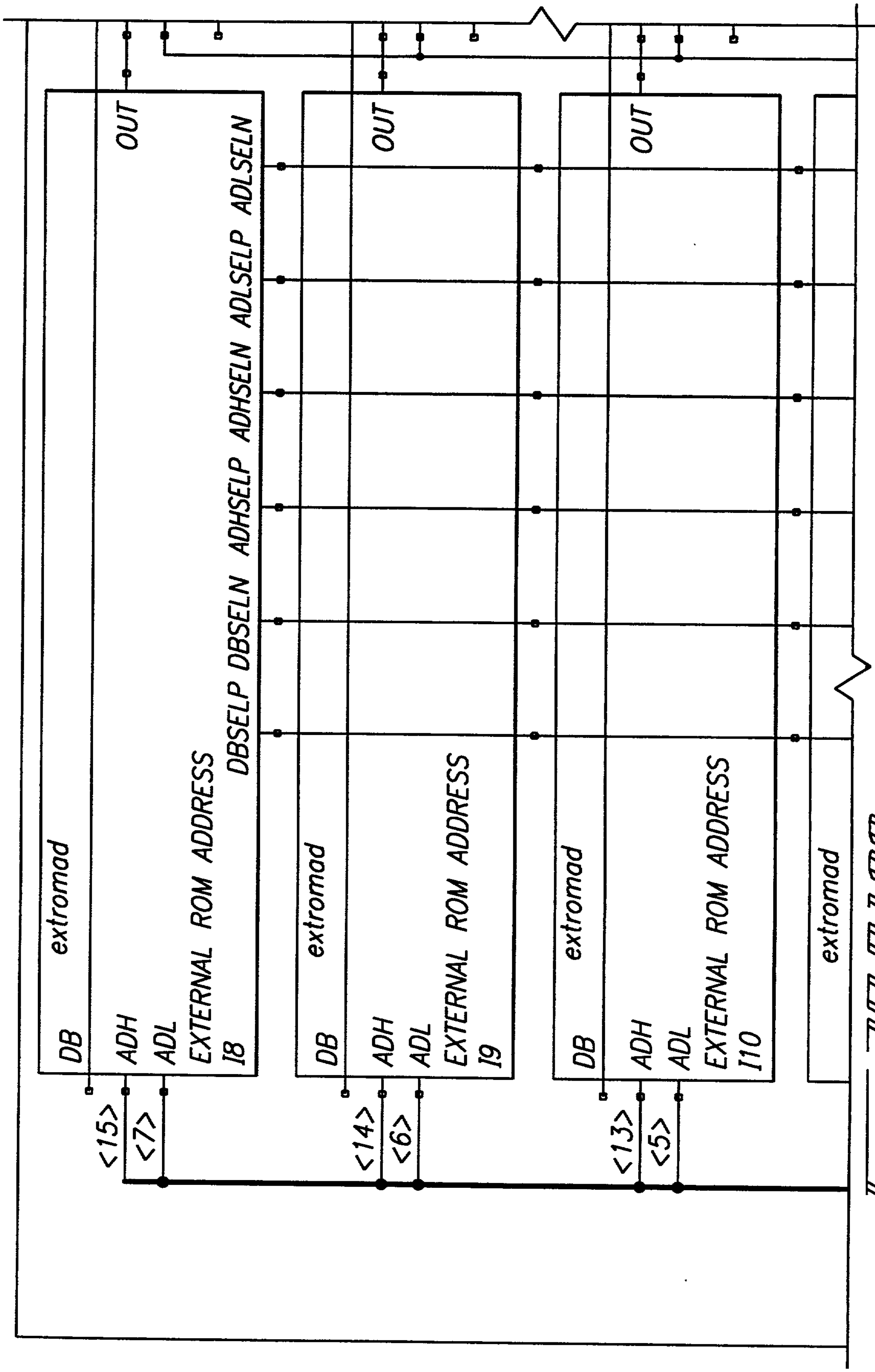
extromad
DB
ADH
ADL
OUT
EXTERNAL ROM ADDRESS
I8
I9
I10
DBSELP DBSELN ADHSELP ADHSELN ADLSELP ADLSELN
<15>
<7>
<14>
<6>
<13>
<5>

Fig 20.IAA

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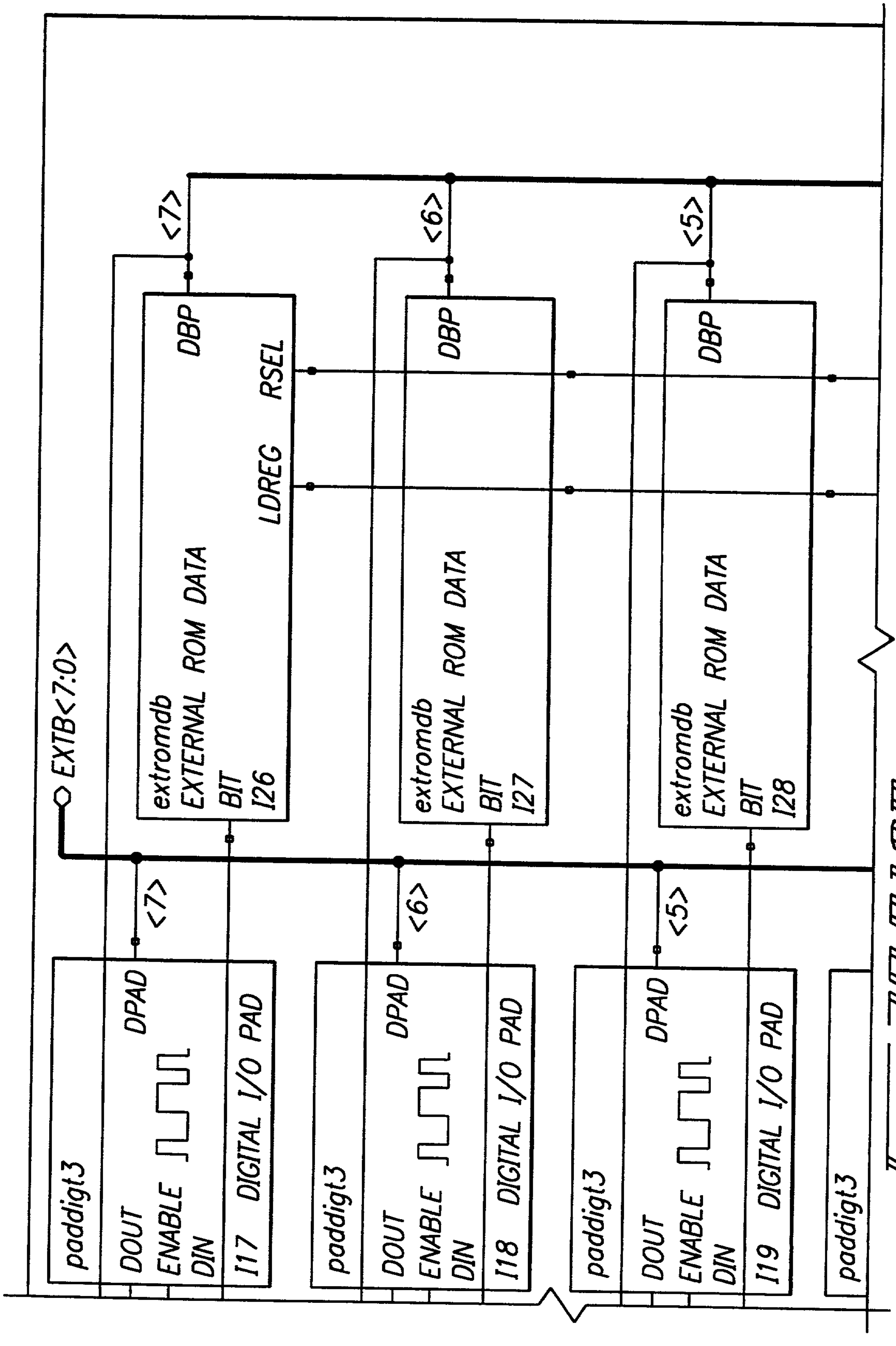

Fig. 20.01AB

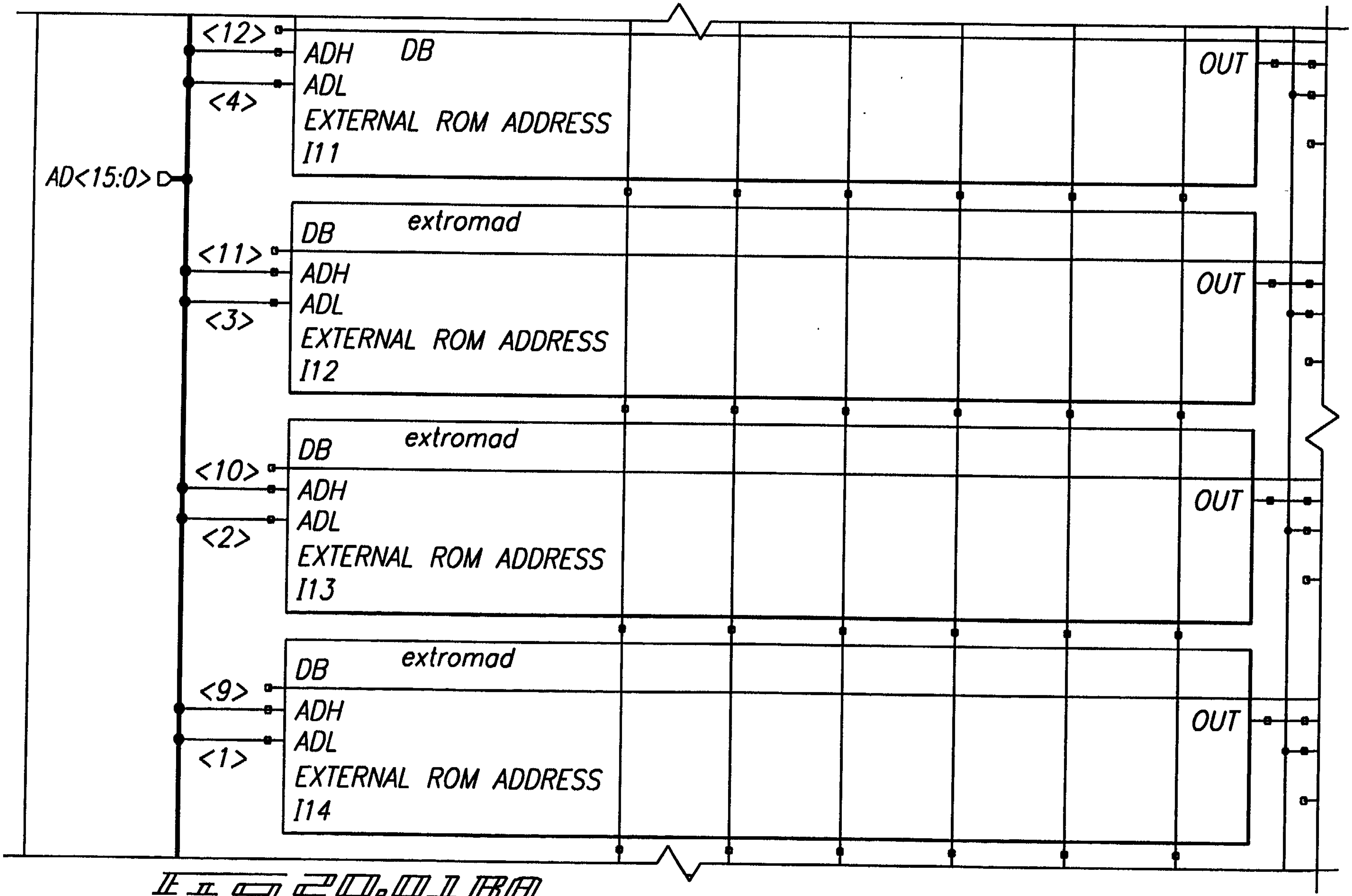
AD<15:0>
<12>
<4>
<11>
<3>
<10>
<2>
<9>
<1>
ADH
DB
ADL
EXTERNAL ROM ADDRESS
I11
OUT
DB
extromad
ADH
ADL
EXTERNAL ROM ADDRESS
I12
OUT
DB
extromad
ADH
ADL
EXTERNAL ROM ADDRESS
I13
OUT
DB
extromad
ADH
ADL
EXTERNAL ROM ADDRESS
I14
OUT

Fig. 20.DIBA

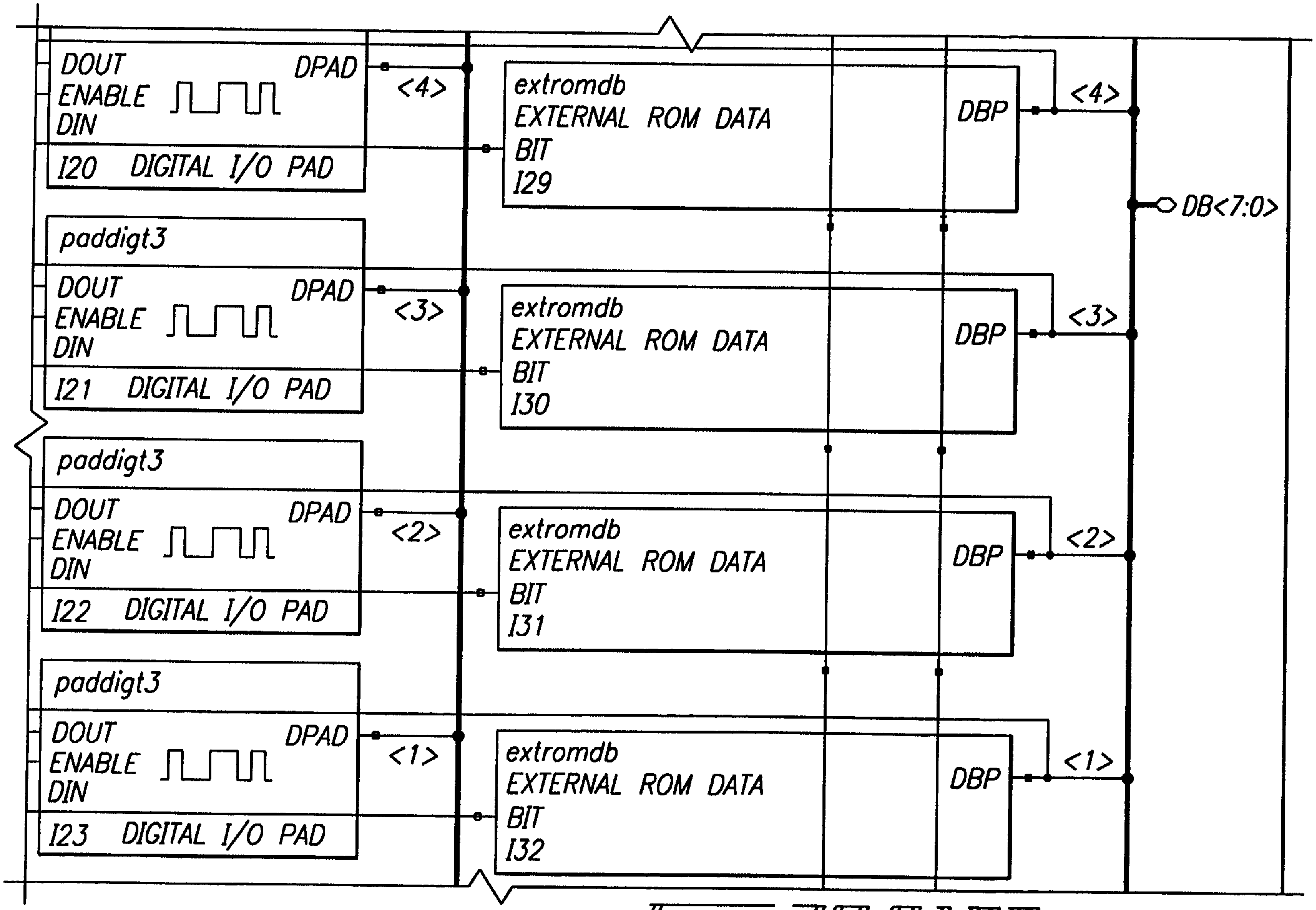
DOUT
ENABLE
DIN
DPAD
I20 DIGITAL I/O PAD
<4>
paddigt3
DOUT
ENABLE
DIN
DPAD
I21 DIGITAL I/O PAD
<3>
paddigt3
DOUT
ENABLE
DIN
DPAD
I22 DIGITAL I/O PAD
<2>
paddigt3
DOUT
ENABLE
DIN
DPAD
I23 DIGITAL I/O PAD
<1>
extromdb
EXTERNAL ROM DATA
BIT
I29
DBP
<4>
extromdb
EXTERNAL ROM DATA
BIT
I30
DBP
<3>
extromdb
EXTERNAL ROM DATA
BIT
I31
DBP
<2>
extromdb
EXTERNAL ROM DATA
BIT
I32
DBP
<1>
DB<7:0>

Fig 20.01BB

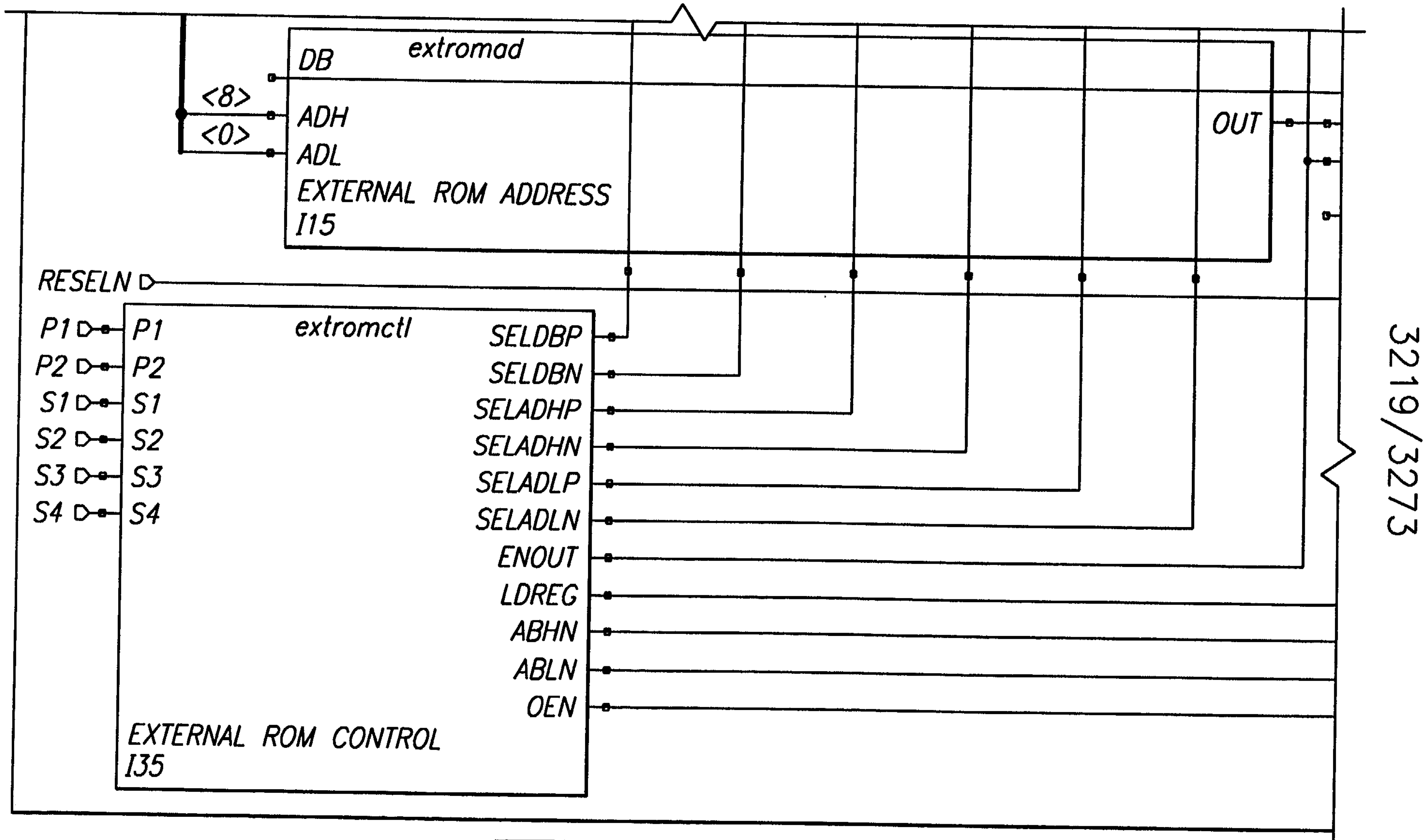
3219/3273
DB
extromad
<8>
ADH
<0>
ADL
EXTERNAL ROM ADDRESS
I15
OUT
RESELN
P1
P2
S1
S2
S3
S4
extromctl
P1
P2
S1
S2
S3
S4
SELDBP
SELDBN
SELADHP
SELADHN
SELADLP
SELADLN
ENOUT
LDREG
ABHN
ABLN
OEN
EXTERNAL ROM CONTROL
I35

Fig 20.01CA

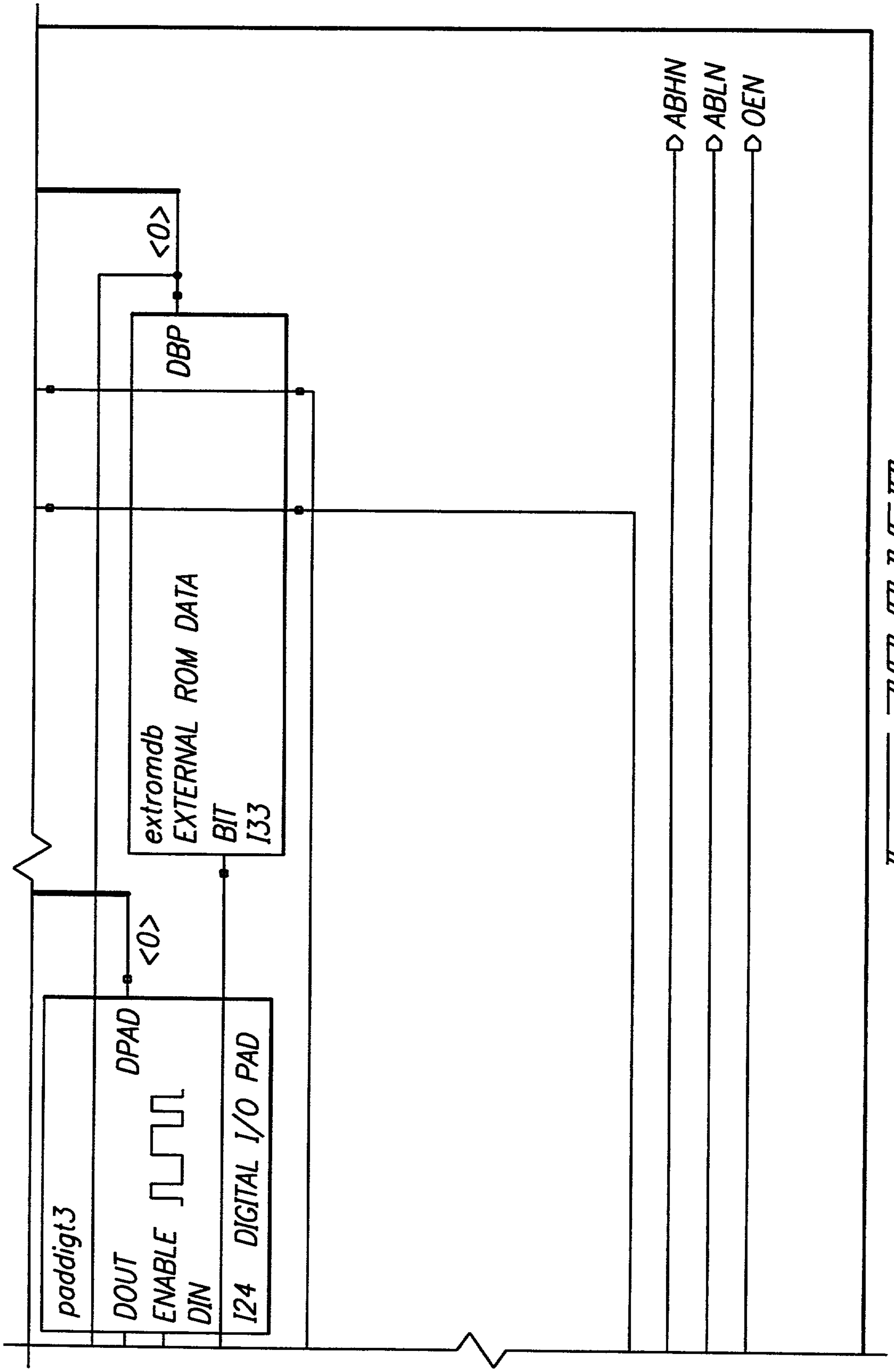
ABHN
ABLN
OEN
<0>
DBP
extromdb
EXTERNAL ROM DATA
BIT
I33
<0>
DPAD
paddigt3
DOUT
ENABLE
DIN
I24
DIGITAL I/O PAD

Fig 20.01CB

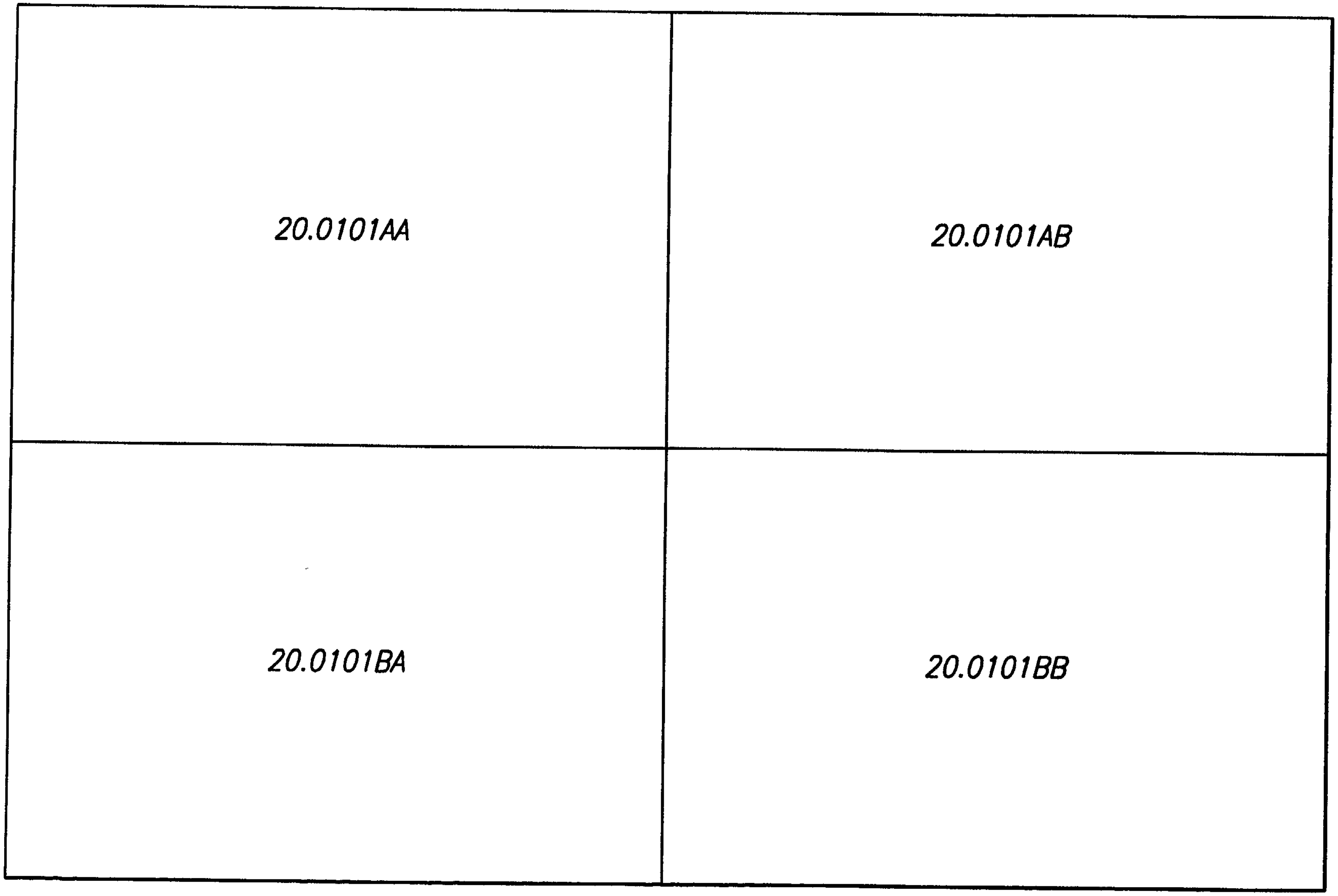

Fig 20.0101

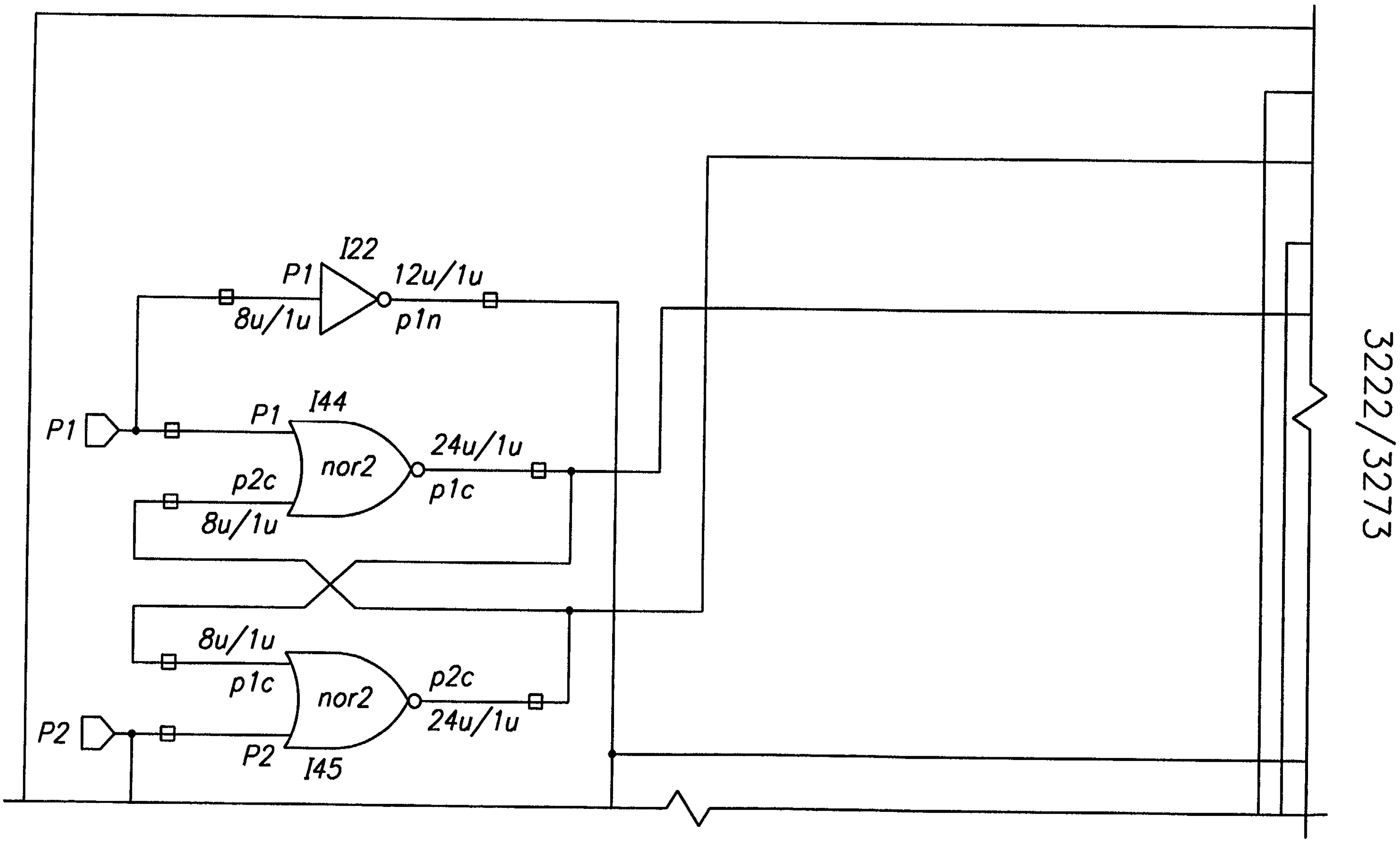

Fig 20.0101AA

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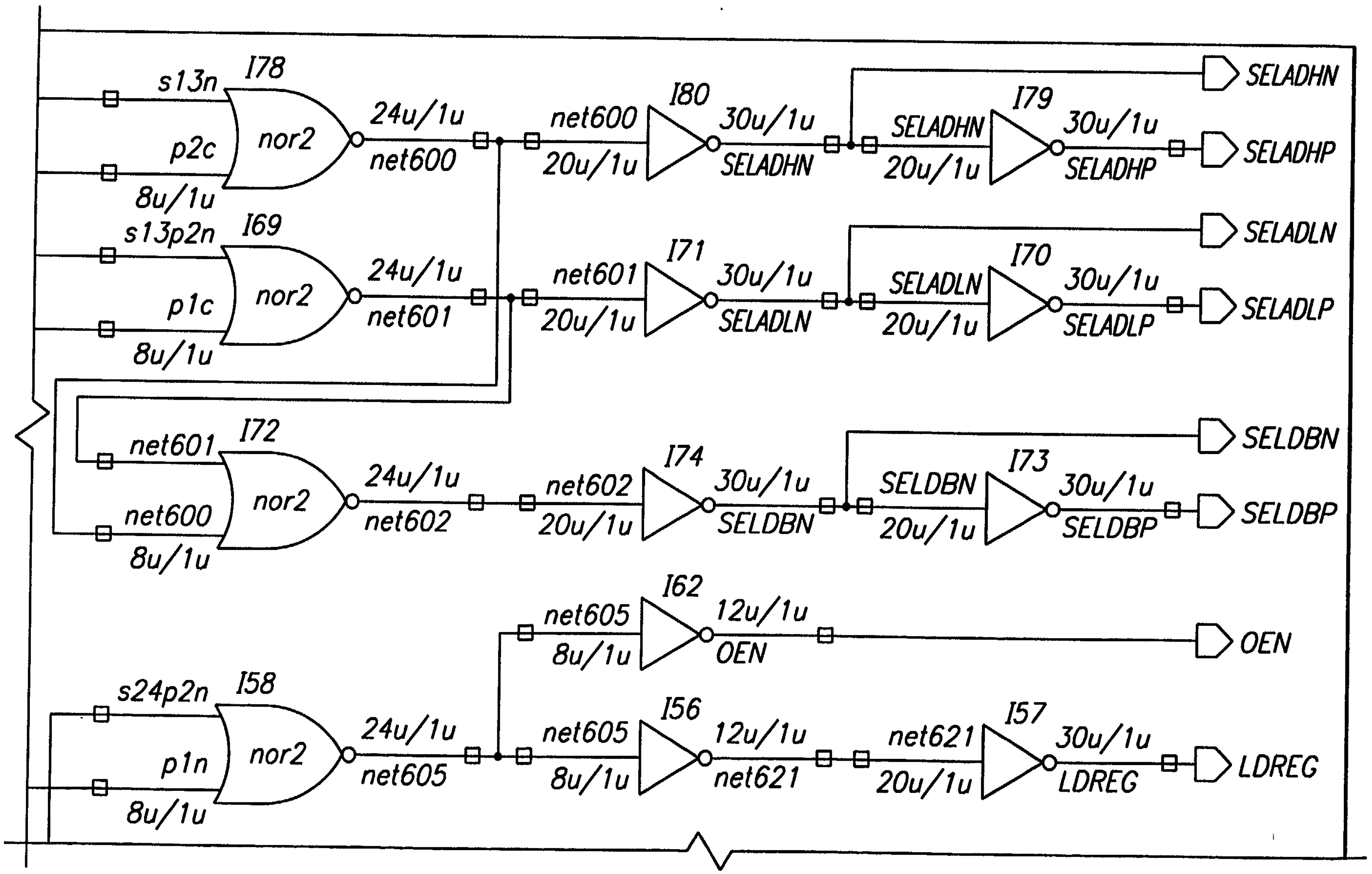

Fig_20.0101AB

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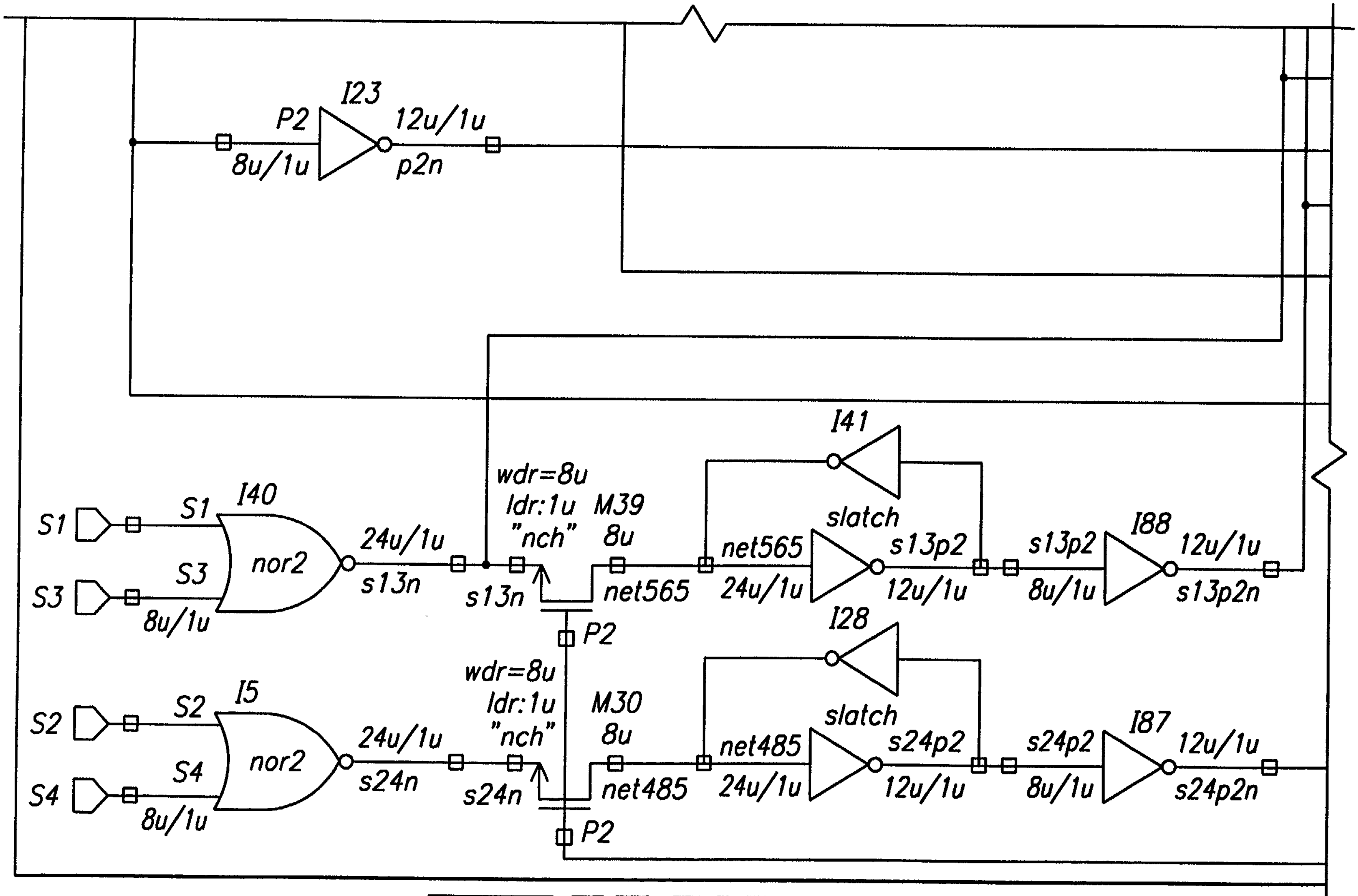

Fig 20.0101BA

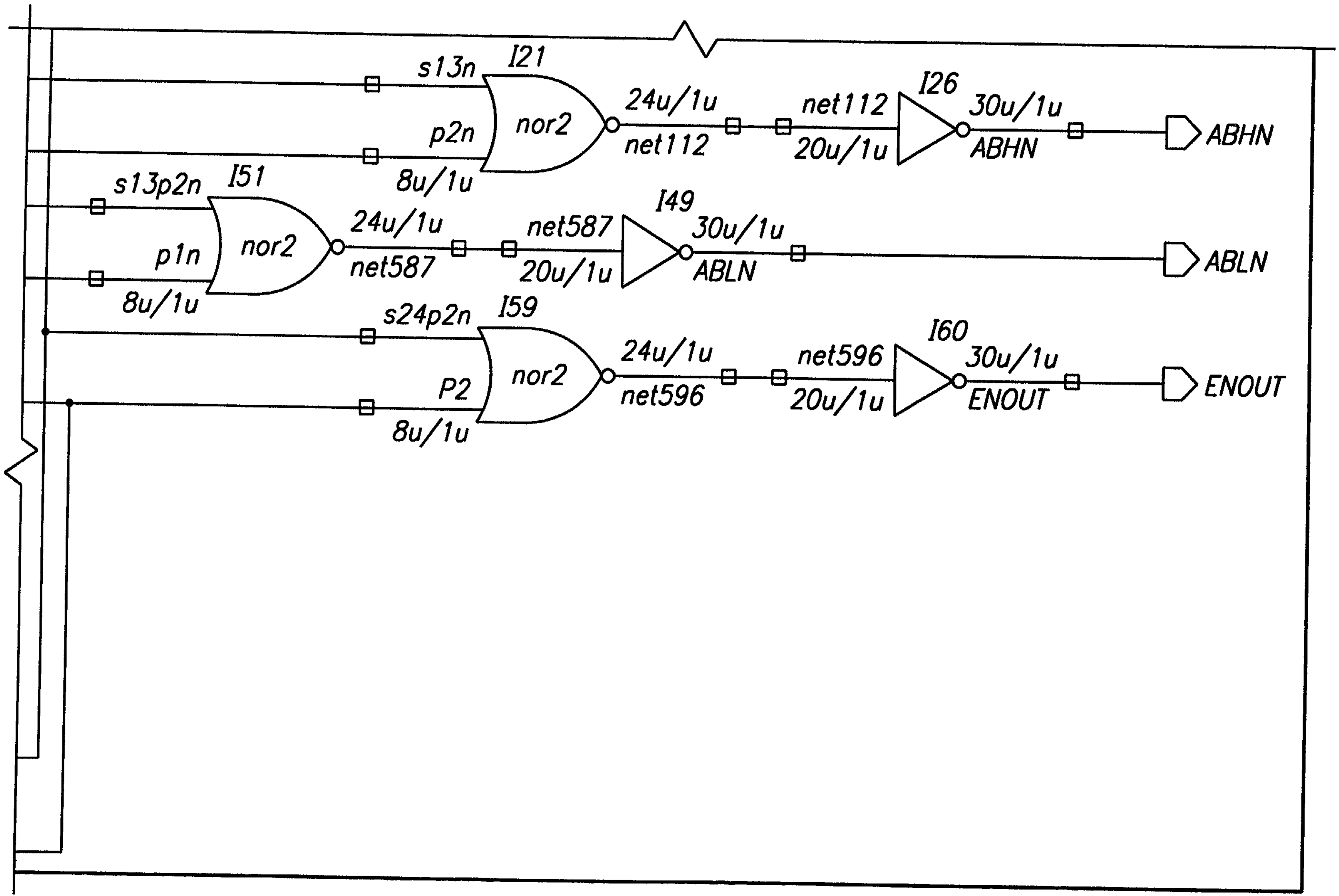

Fig 20.01.01BB

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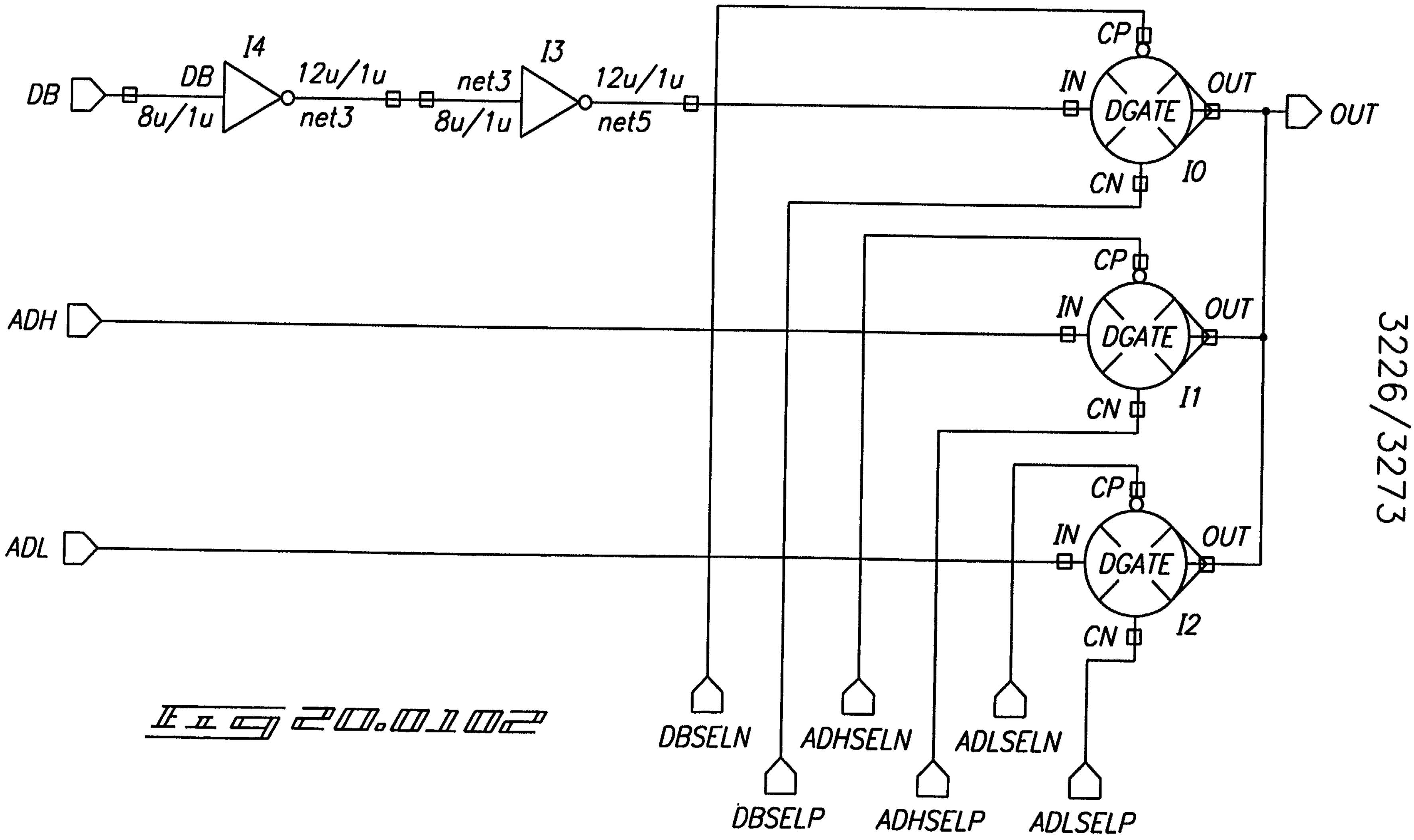

Fig 20.0102

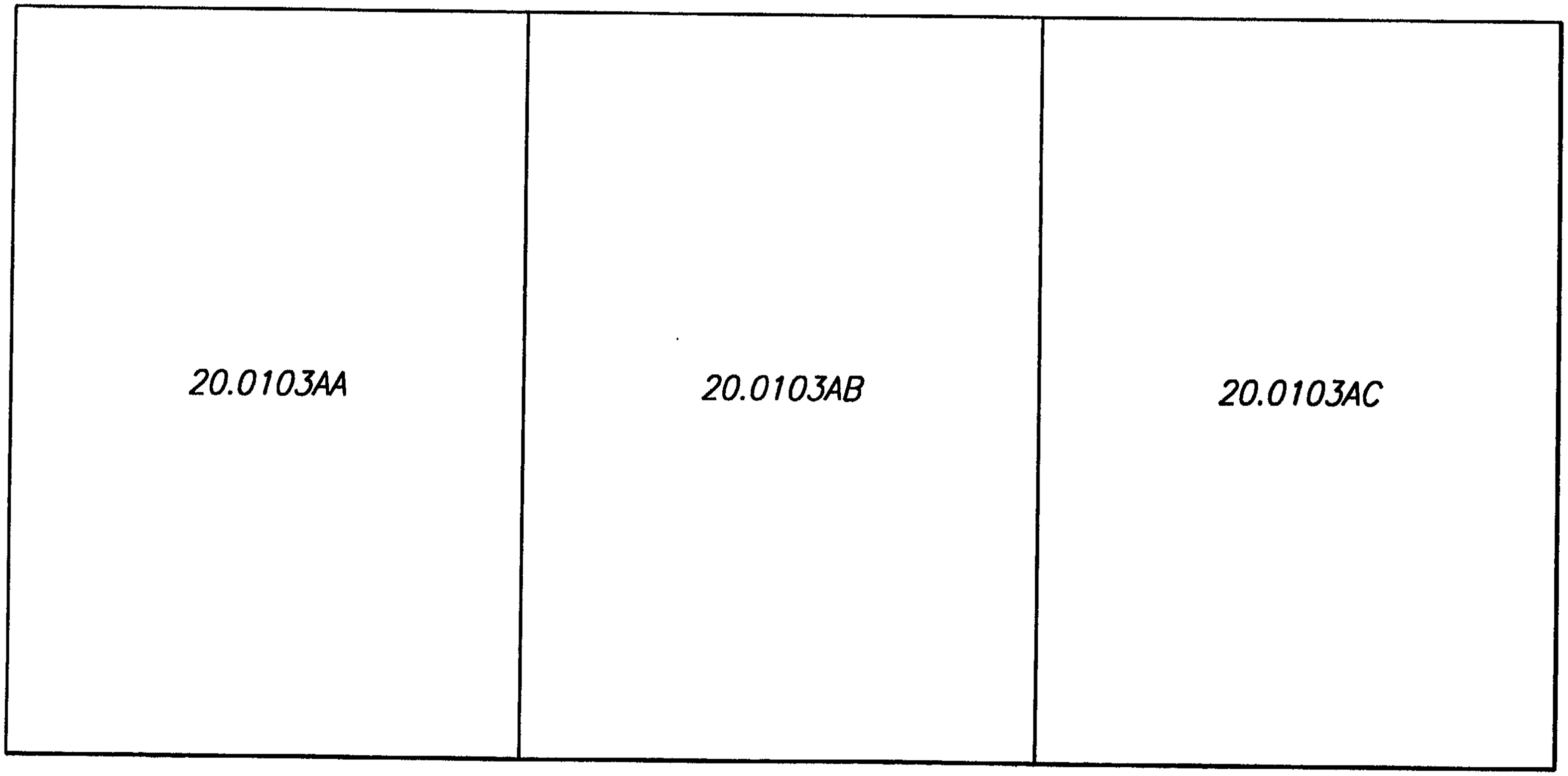

Fig 20.0103

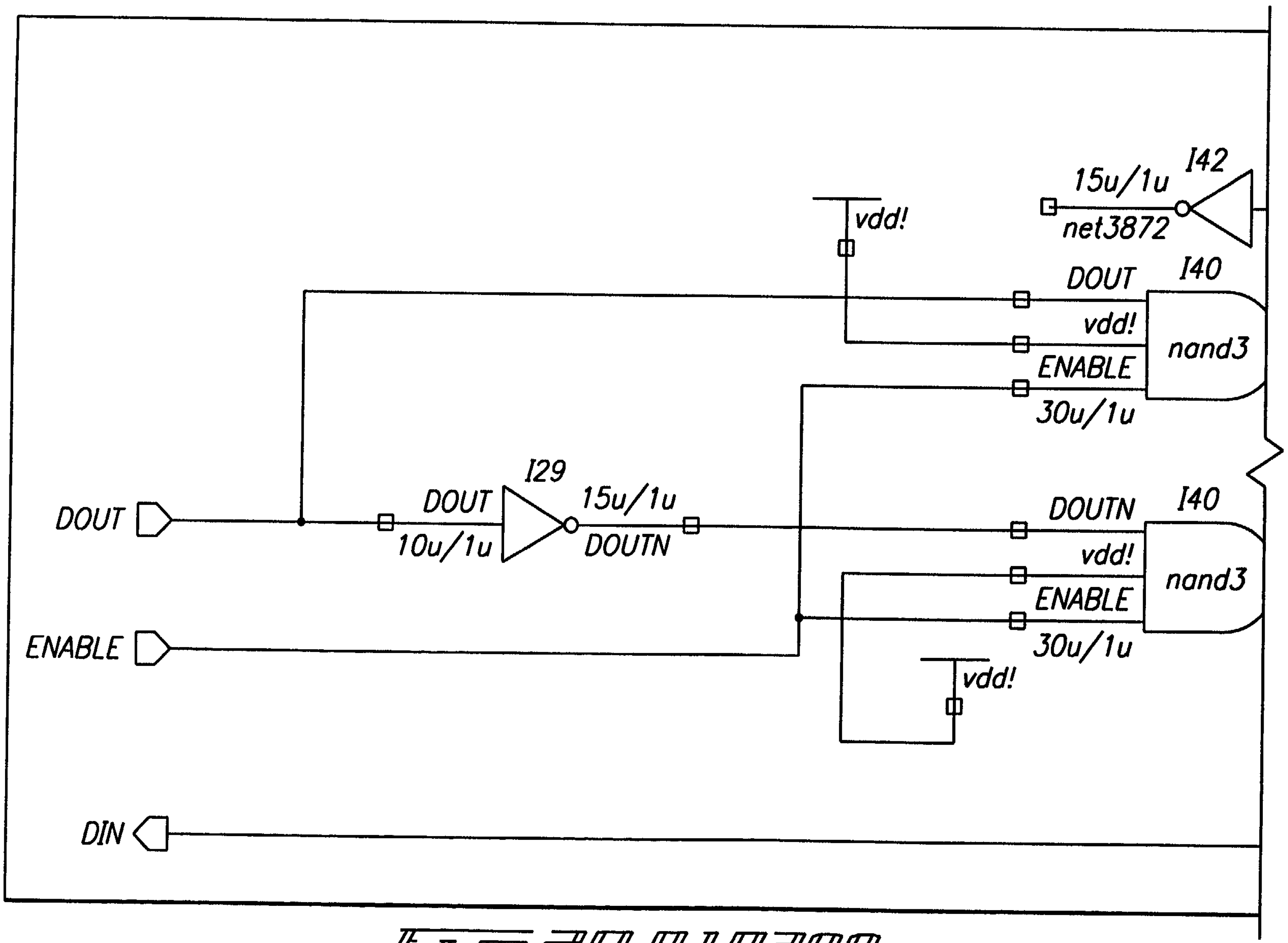

Fig 20.0103AA

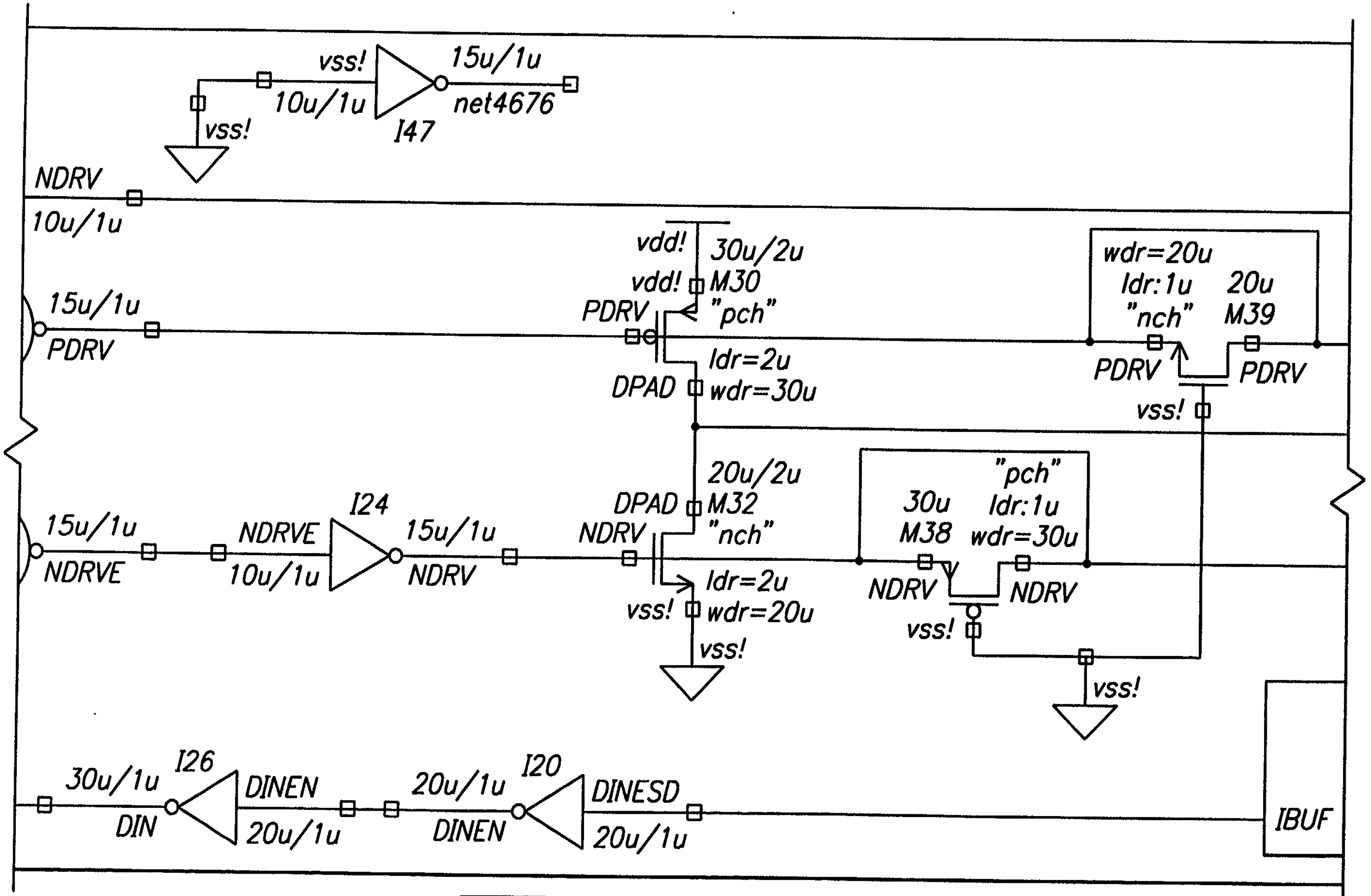

Fig 20.0103AB

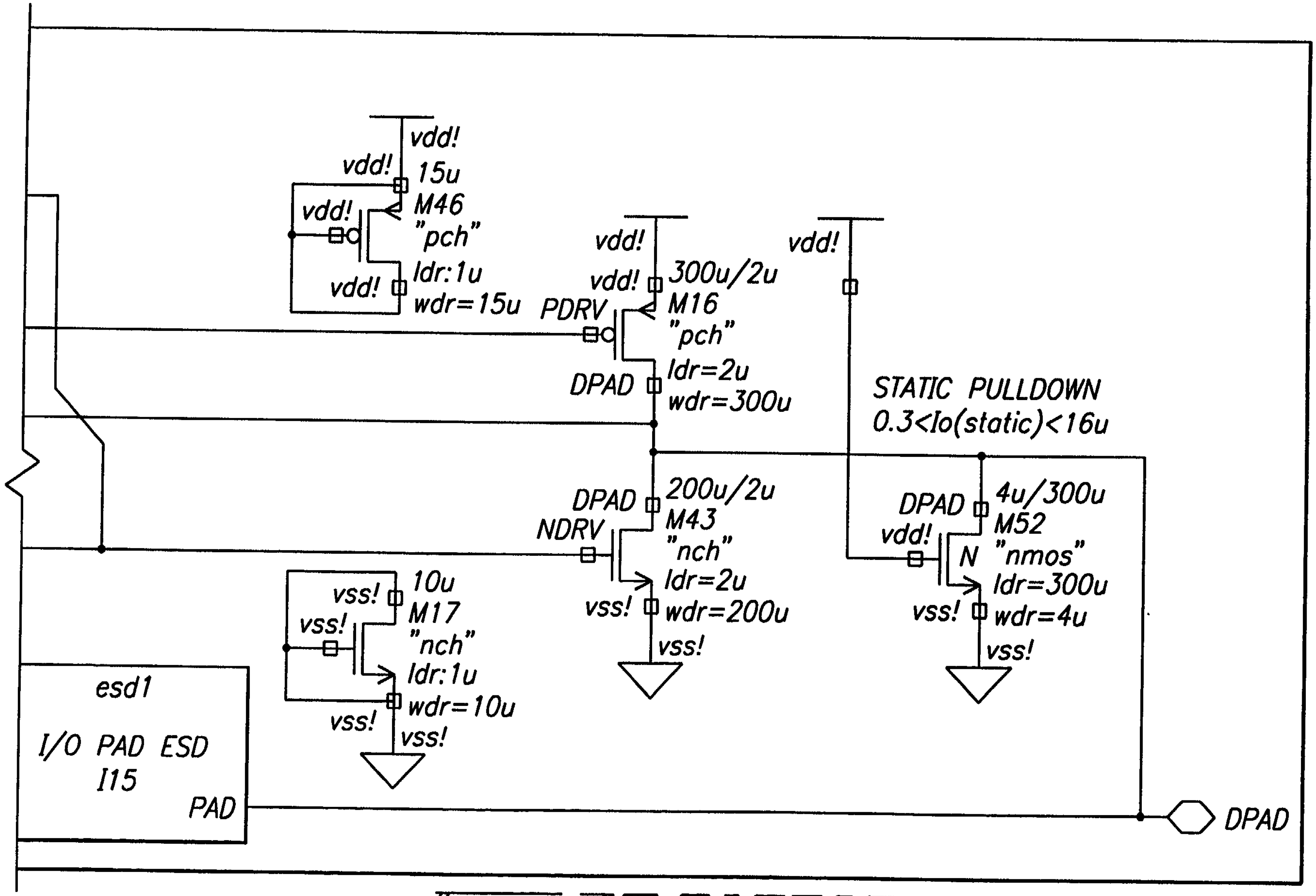

FIG 20.0103AC

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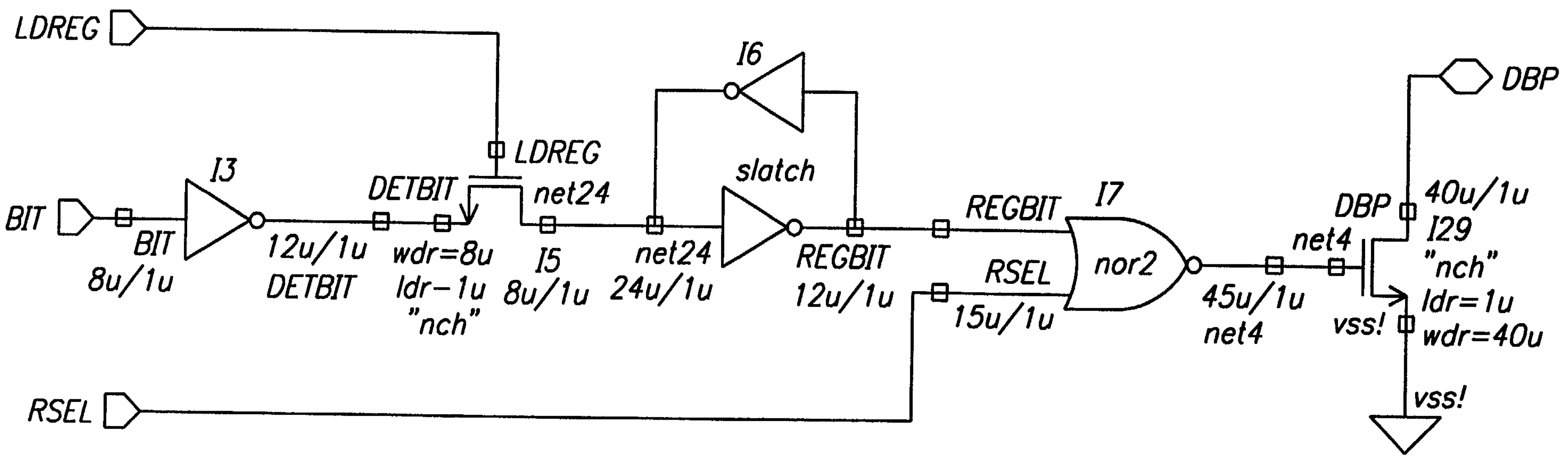


Fig. 20.0104

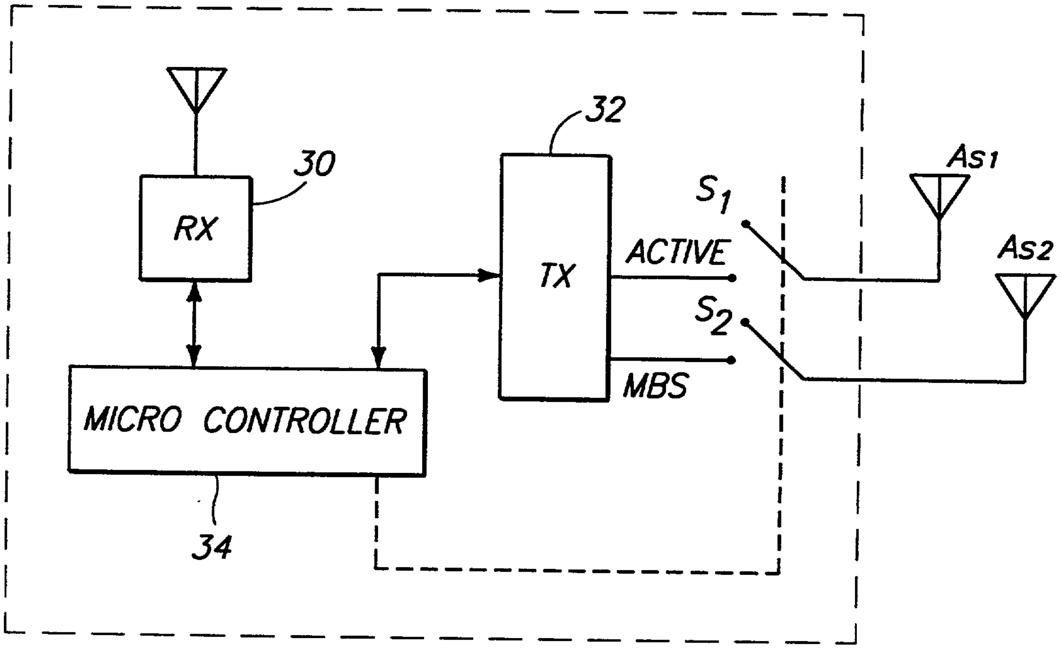

30
RX
32
TX
MICRO CONTROLLER
34
ACTIVE
MBS
S1
S2
As1
As2

Fig 21

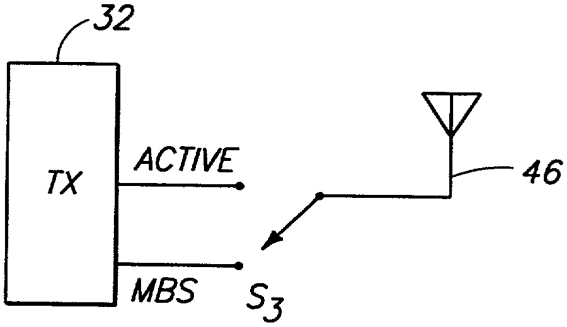
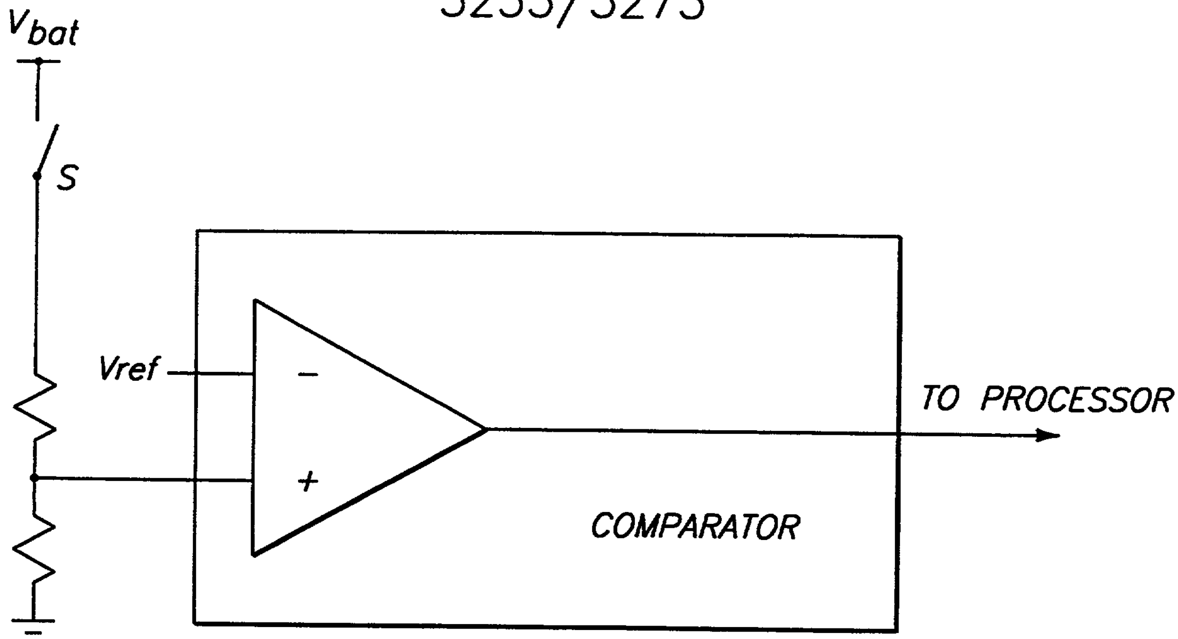

32
TX
ACTIVE
MBS
S3
46

Fig 22



V_{ref} = bandgap voltage ≈ 1.2 V for silicon

Fig 23

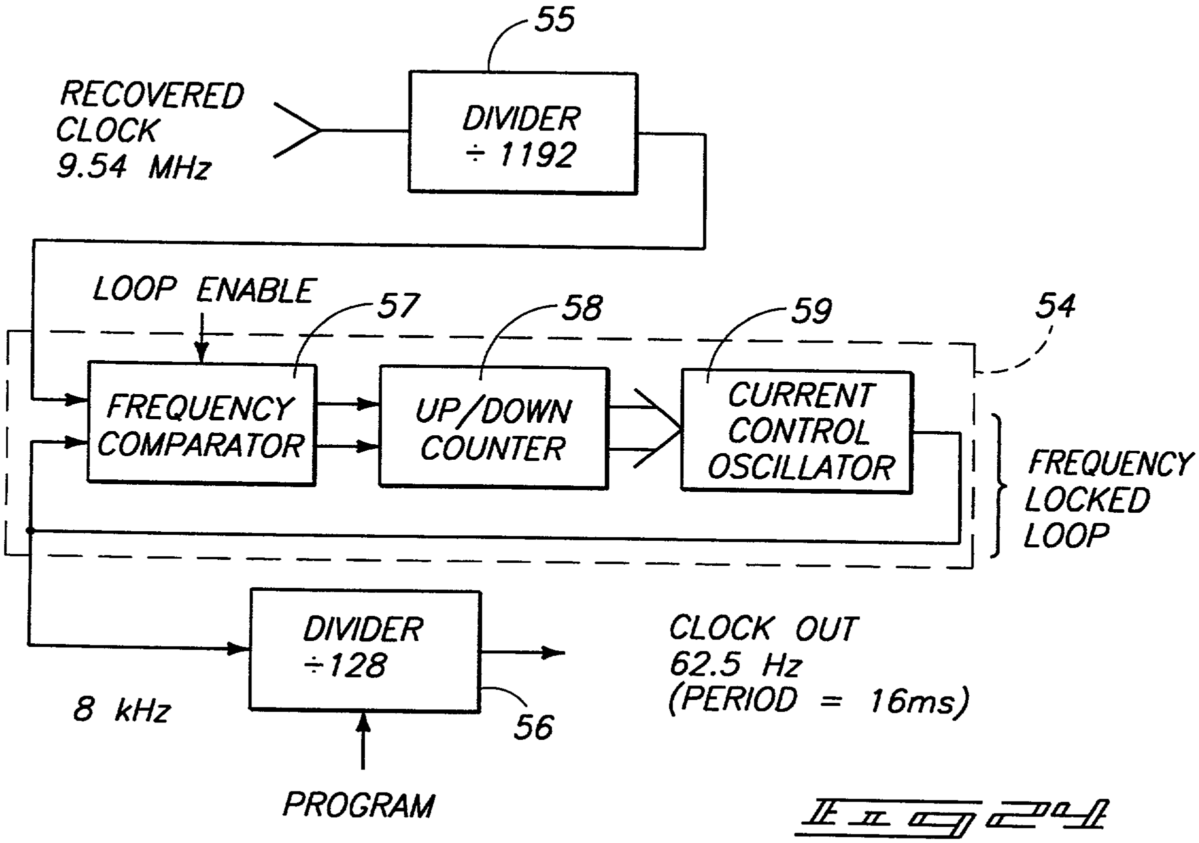


Fig 24

WAKEUP SEQUENCE

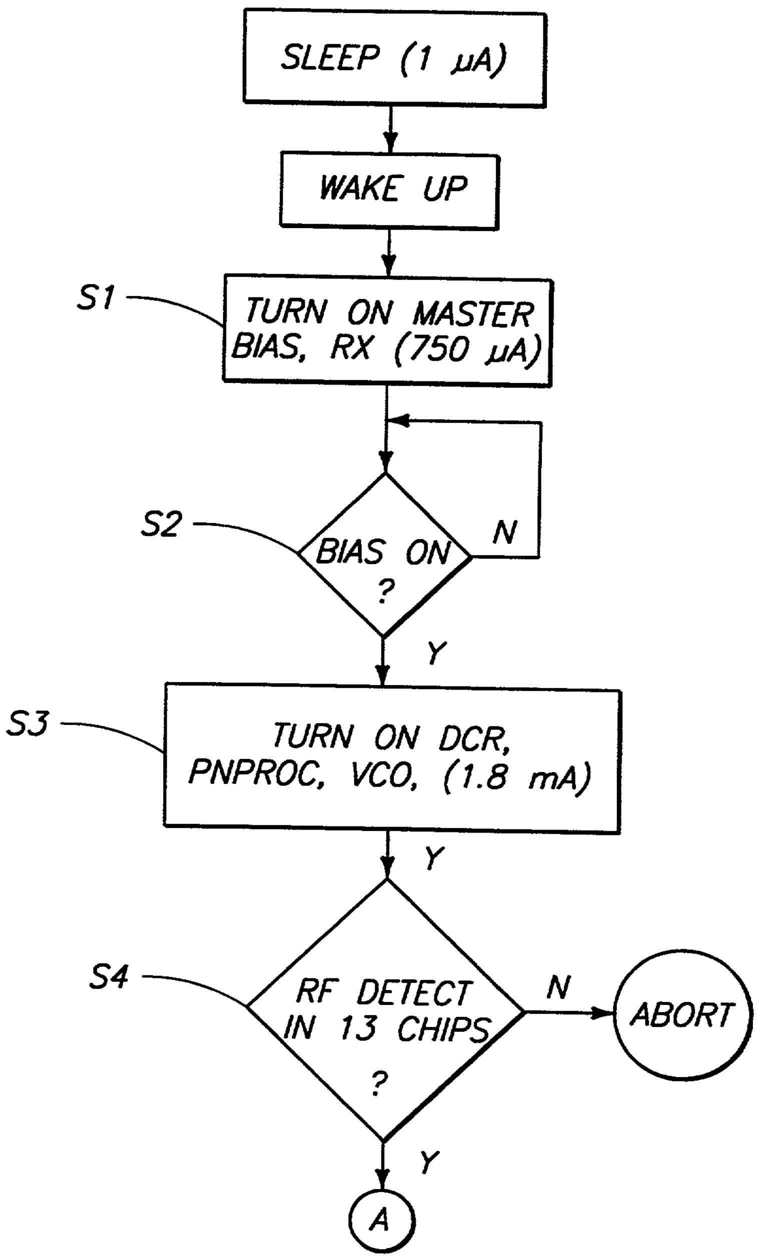


FIG 25

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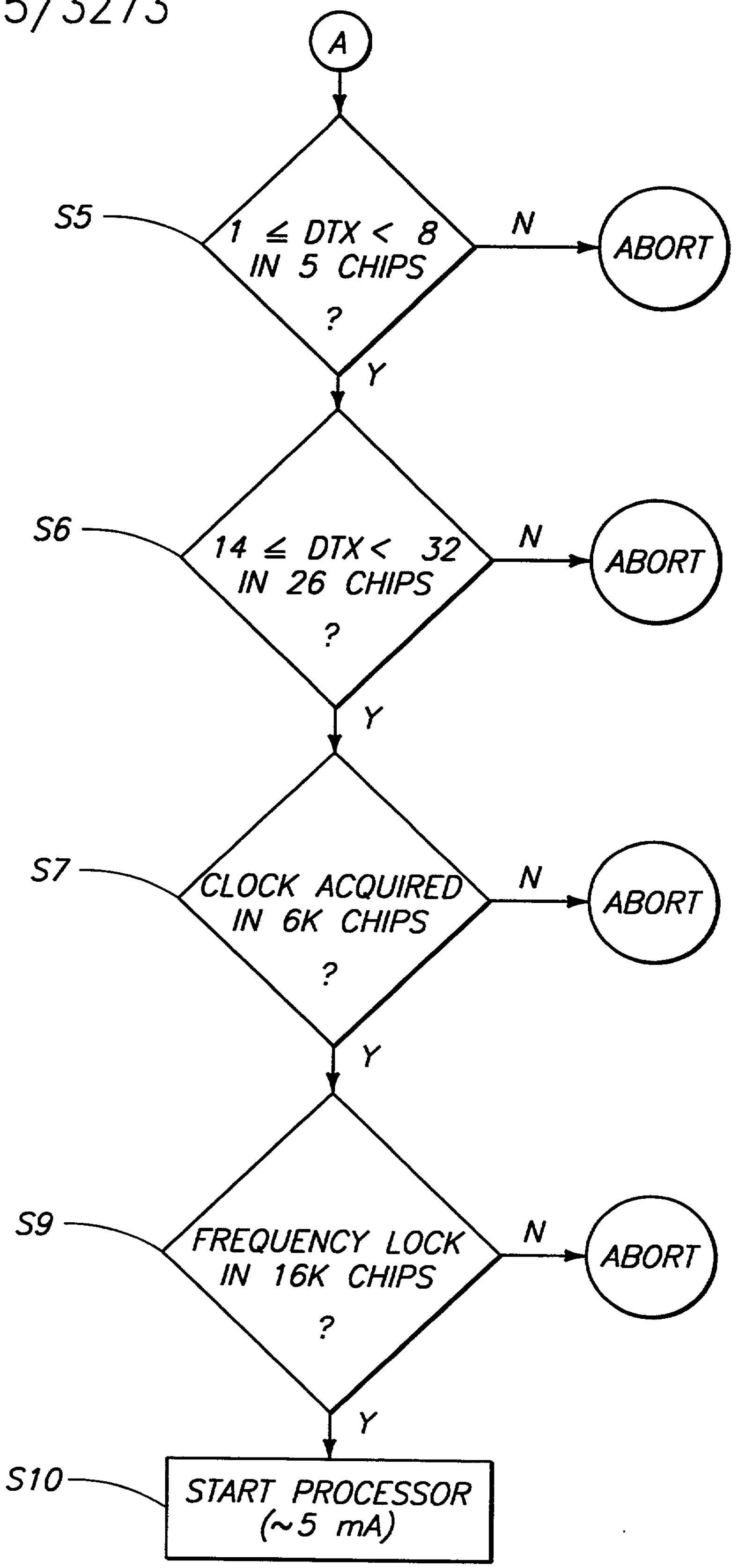

Fig 26

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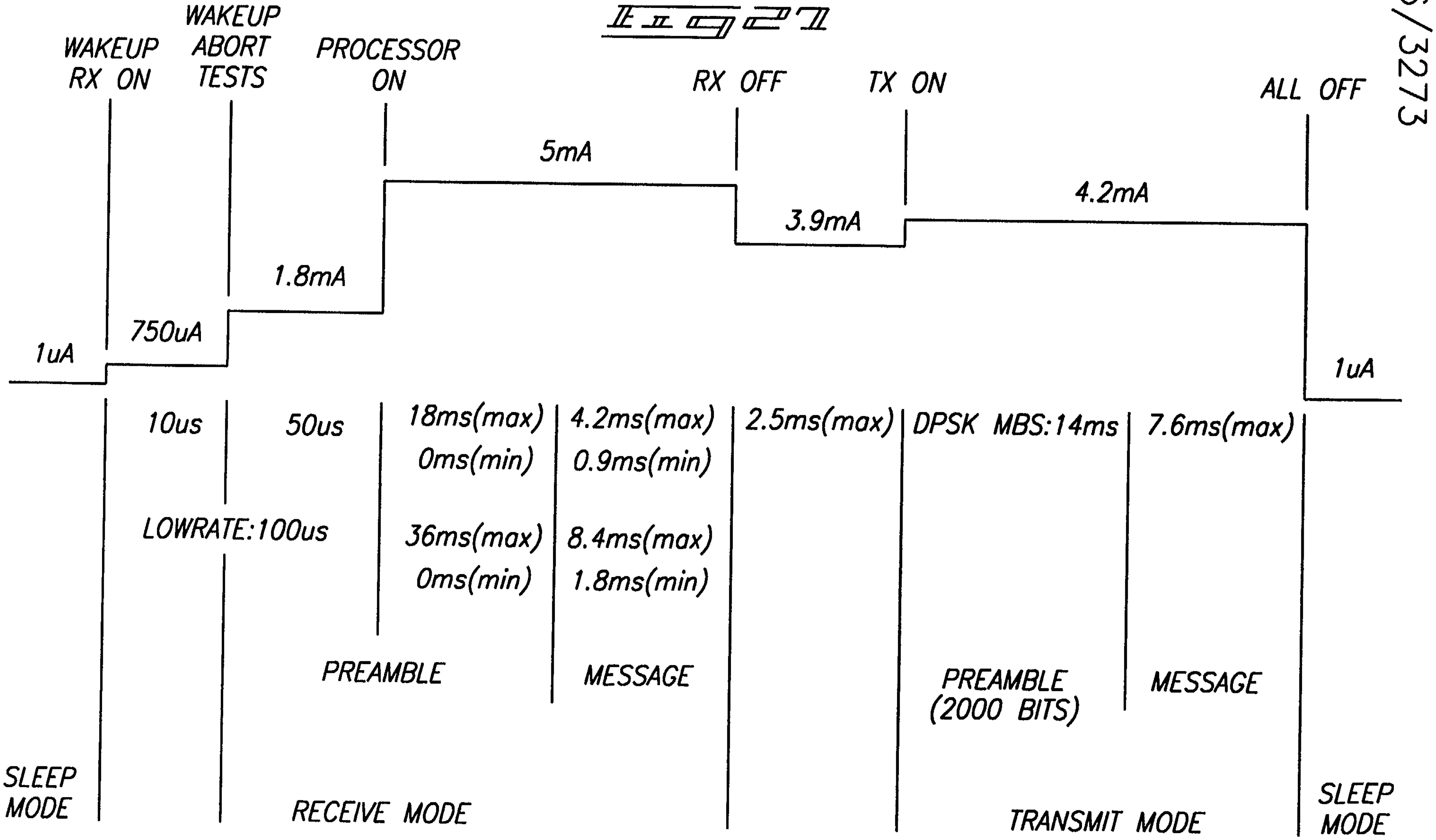

Fig 27

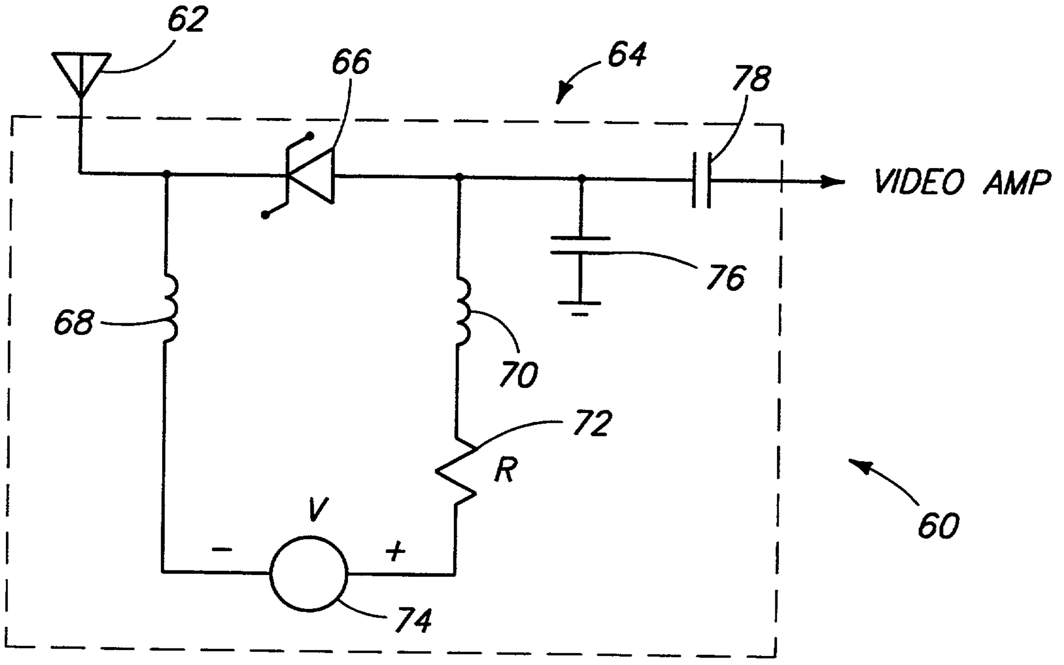
62
66
64
78
VIDEO AMP
76
68
70
72
R
60
V
−
+
74

Fig 28

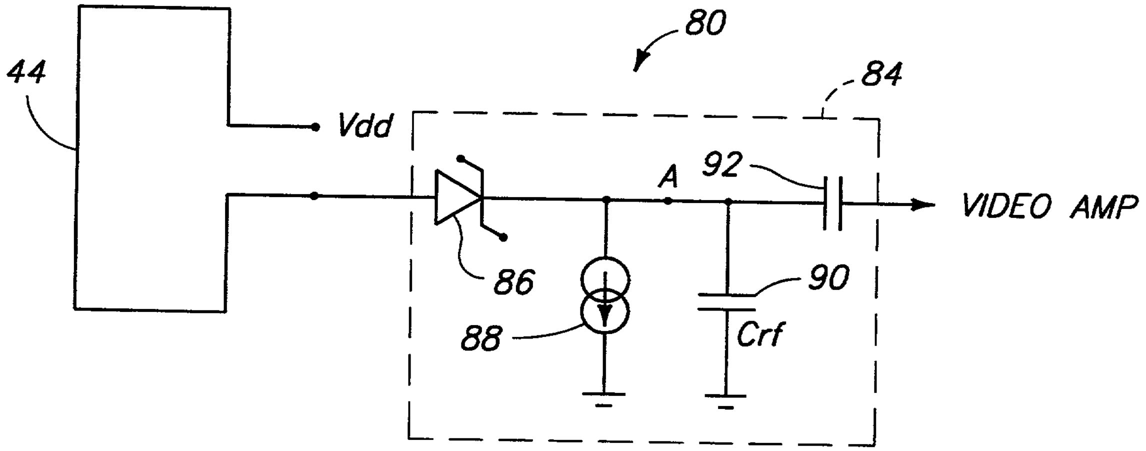
80
44
84
Vdd
92
A
VIDEO AMP
90
86
88
Crf

Fig 29

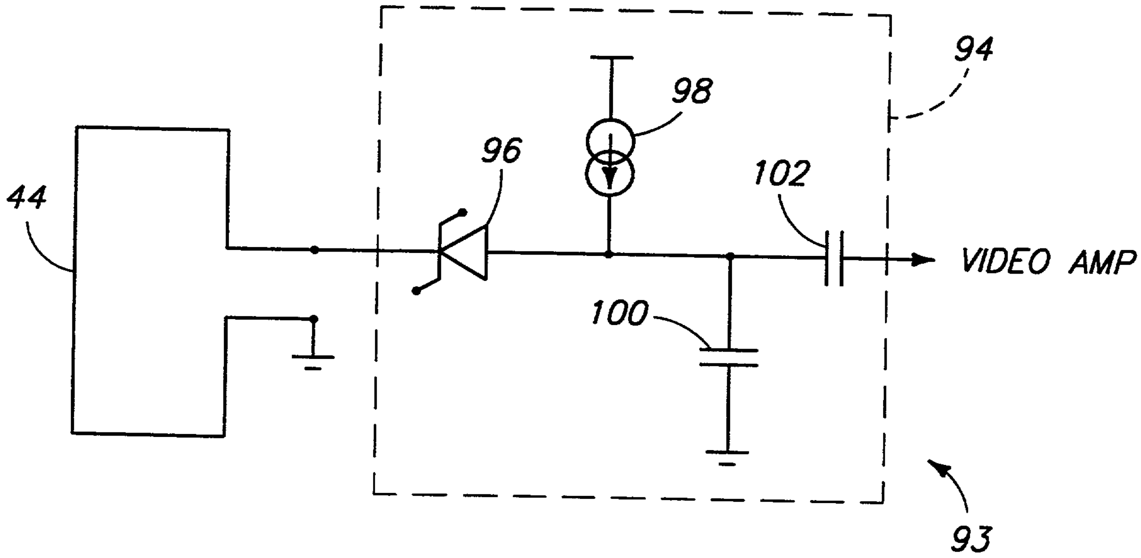
94
98
96
44
102
VIDEO AMP
100
93

FIG 30

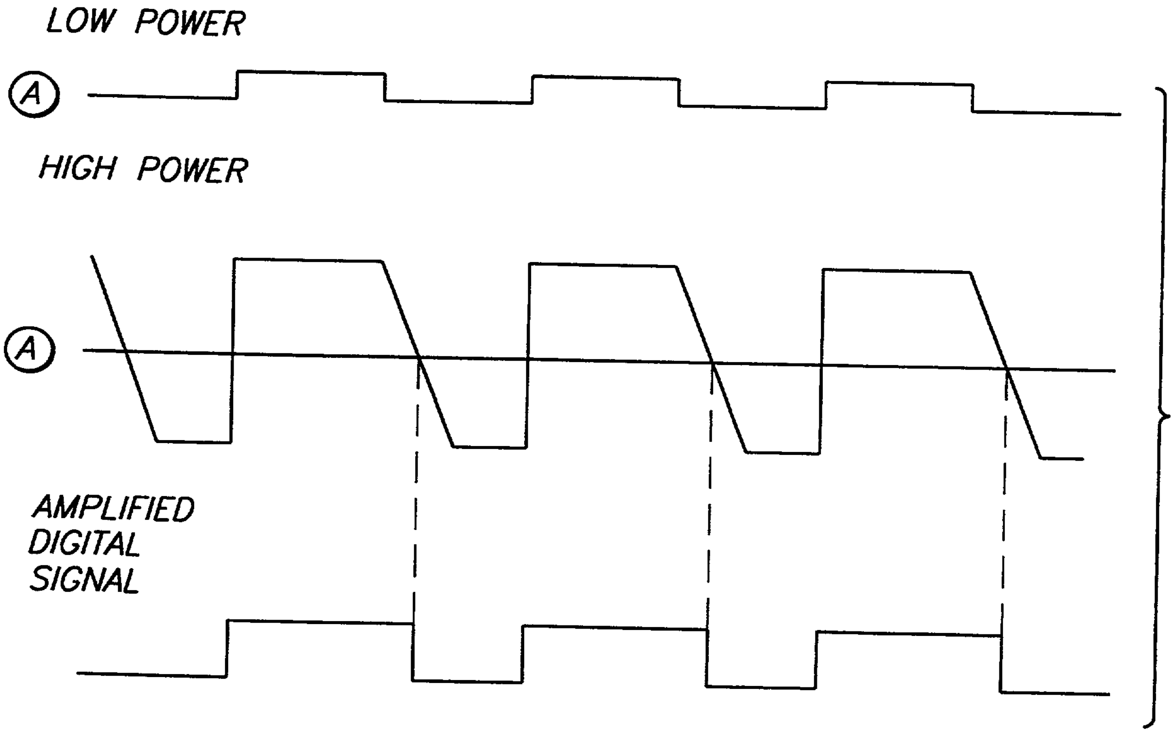
LOW POWER
A
HIGH POWER
A
AMPLIFIED
DIGITAL
SIGNAL

FIG 31

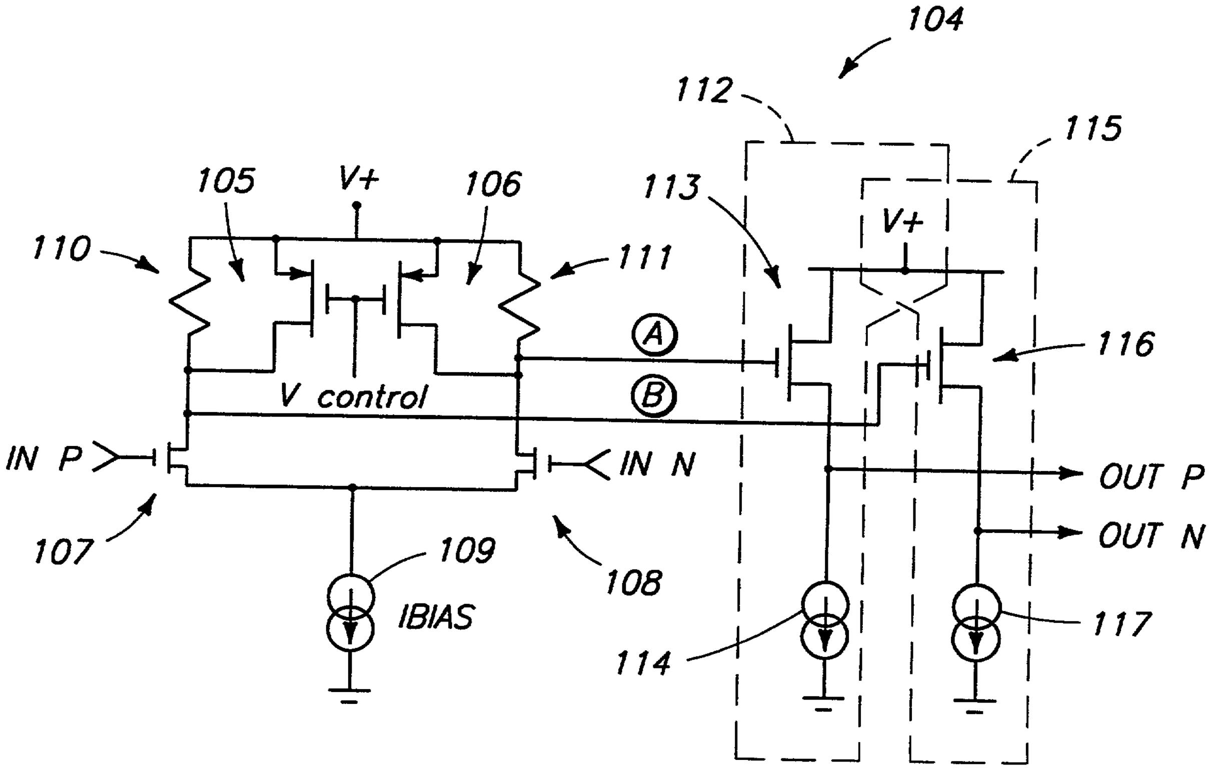
104
112
115
105
V+
106
113
110
111
V+
116
A
B
V control
IN P
IN N
OUT P
OUT N
107
109
108
IBIAS
117
114

Fig 32

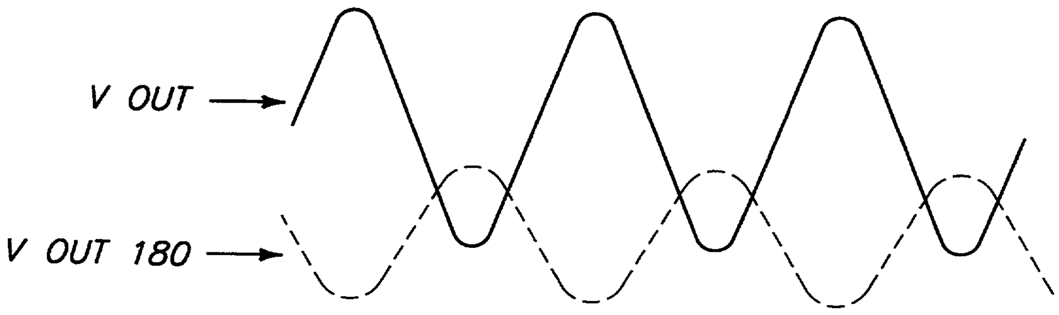
V OUT
V OUT 180

Fig 33

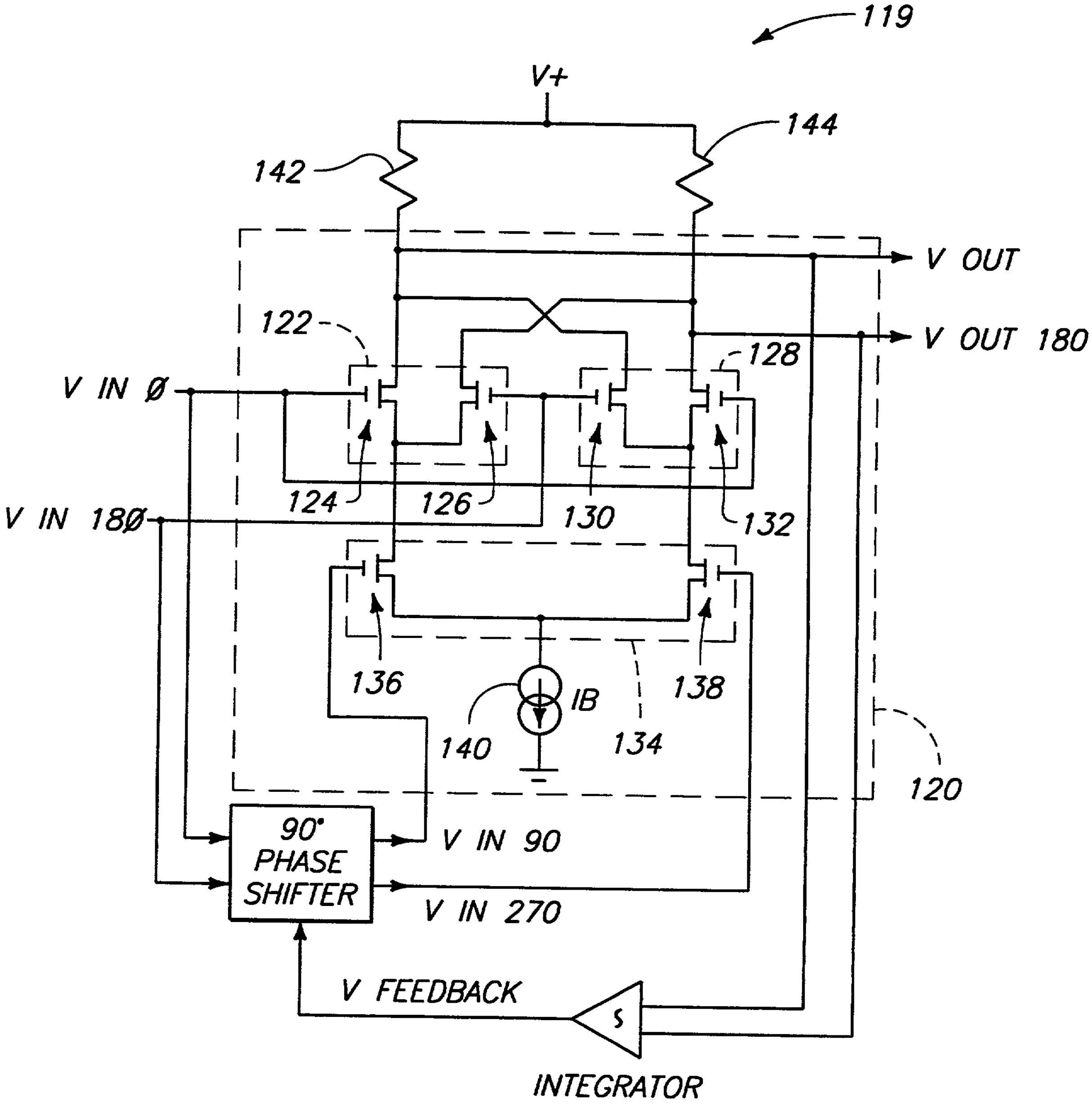
119
V+
142
144
V OUT
V OUT 180
122
128
V IN 0
V IN 180
124
126
130
132
136
138
IB
140
134
120
90°
PHASE
SHIFTER
V IN 90
V IN 270
V FEEDBACK
INTEGRATOR

Fig 34

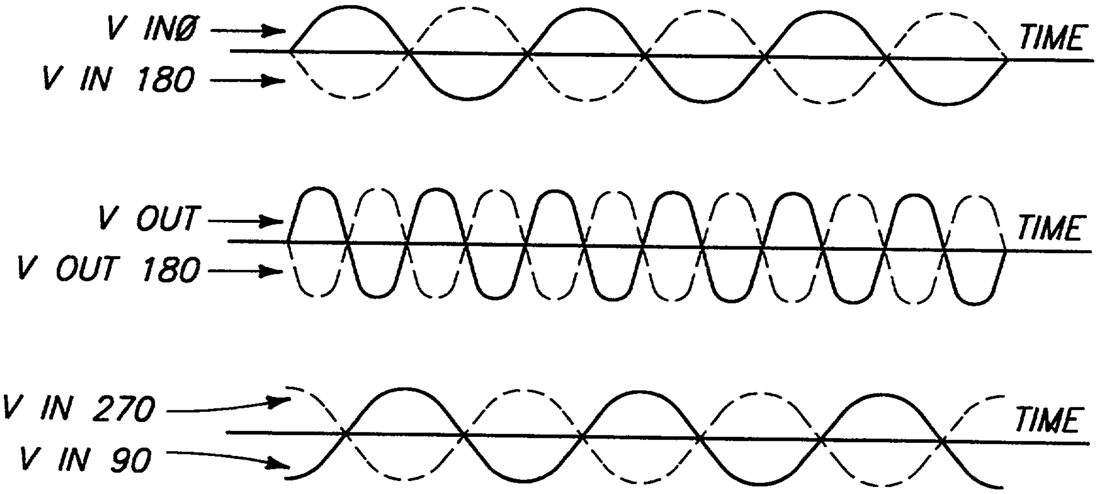
V IN0
V IN 180
TIME
V OUT
V OUT 180
TIME
V IN 270
V IN 90
TIME

FIG. 35

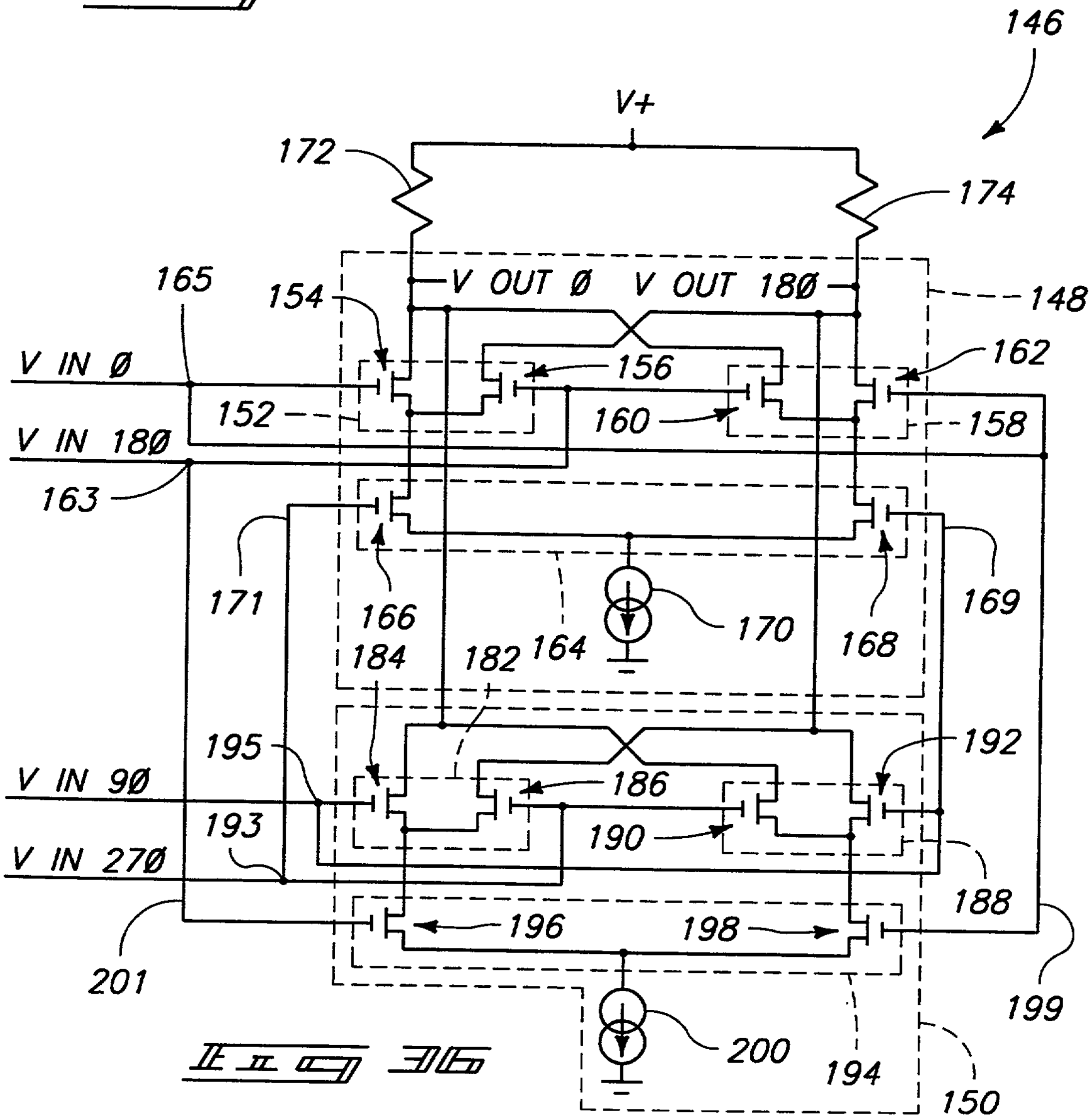
146
V+
172
174
V OUT 0
V OUT 180
148
165
154
156
162
V IN 0
152
160
158
V IN 180
163
171
166
164
170
168
169
184
182
195
192
V IN 90
186
193
190
188
V IN 270
201
196
198
199
200
194
150

FIG. 36

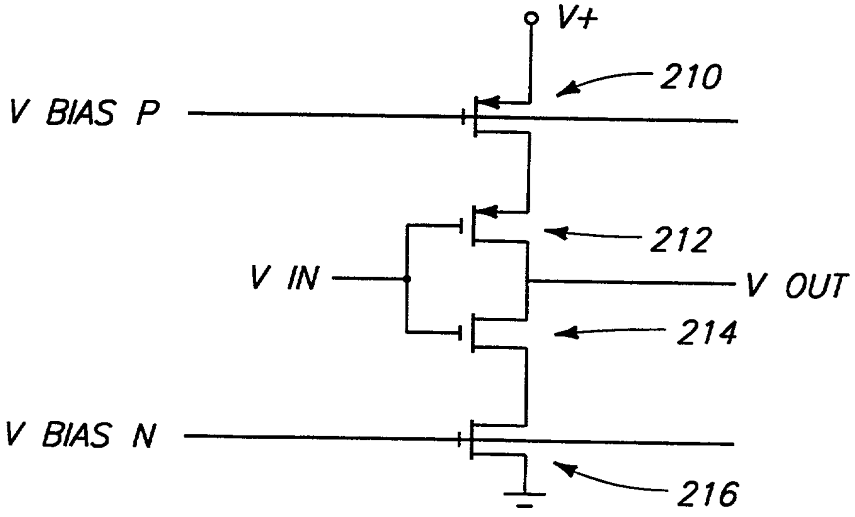

Fig 37

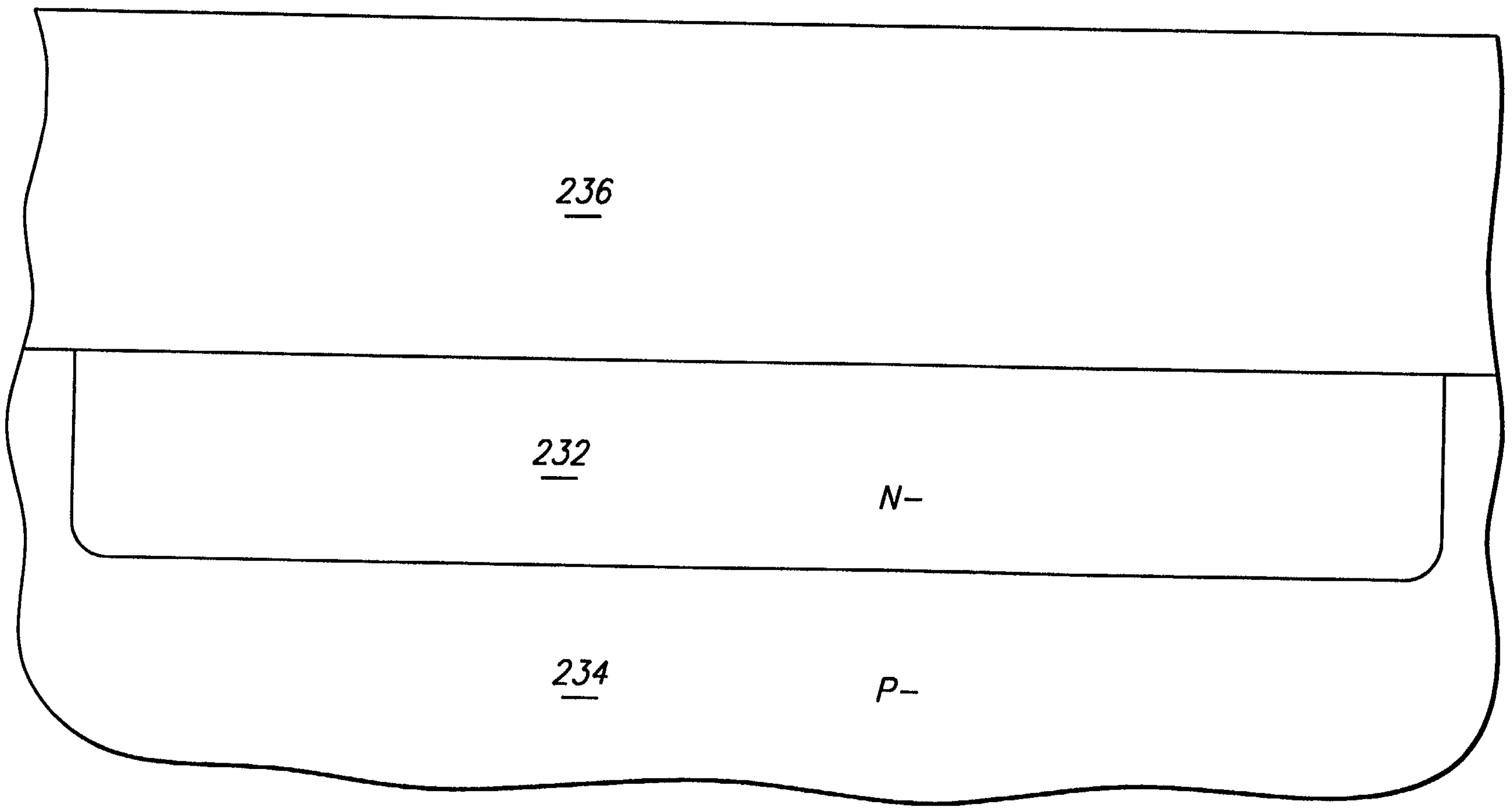

FIG 38

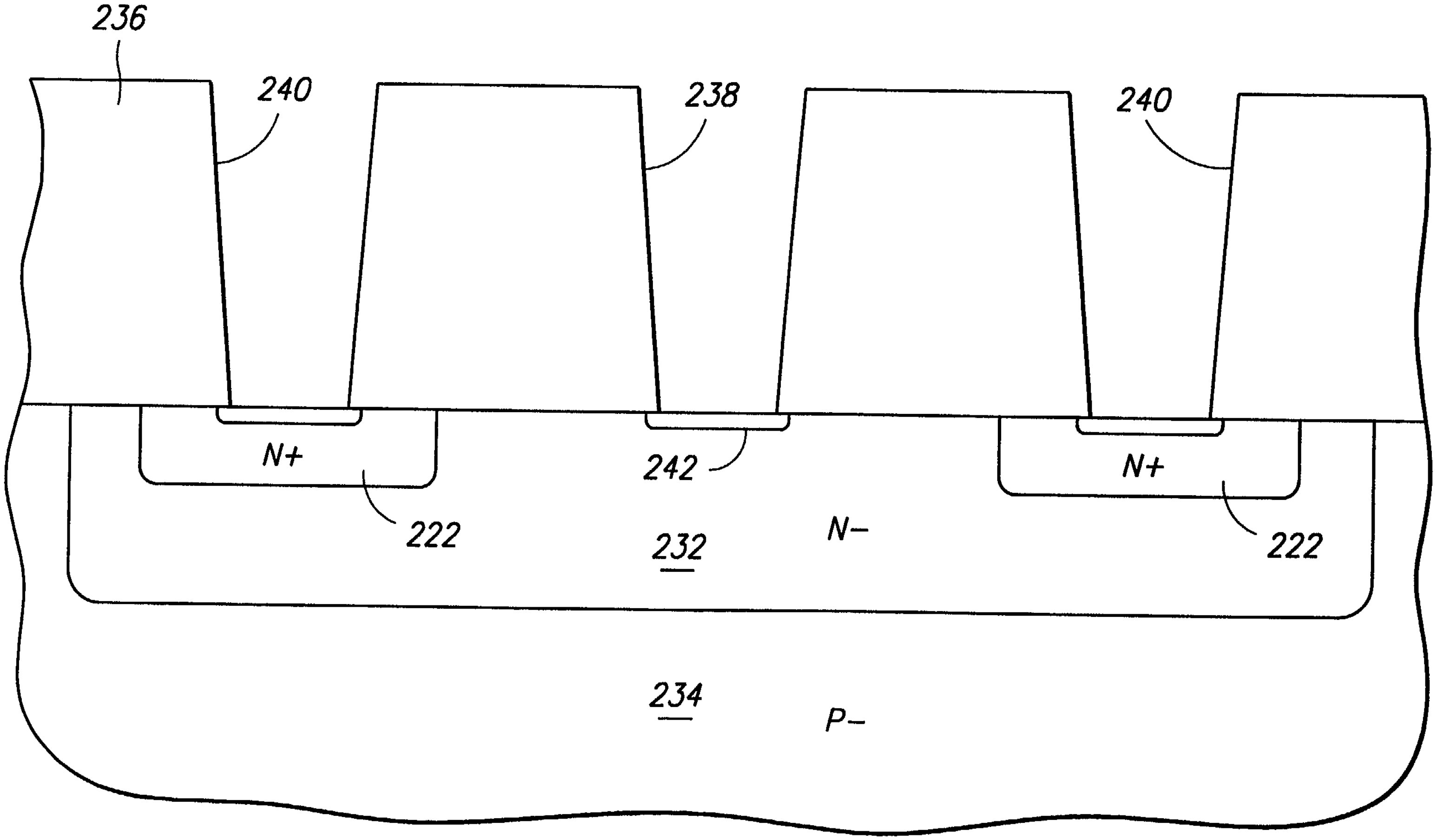

Fig 39

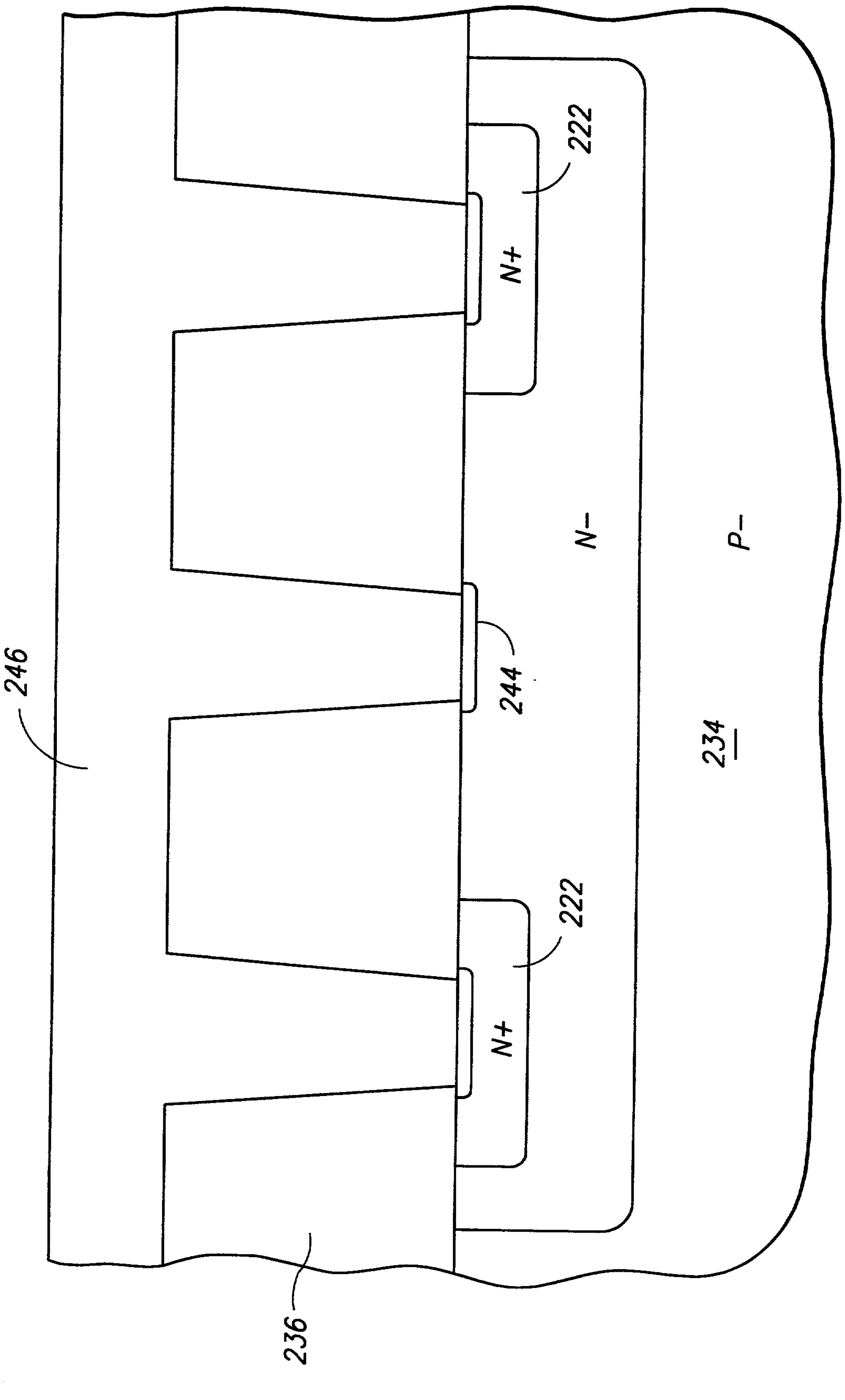

FIG. 40

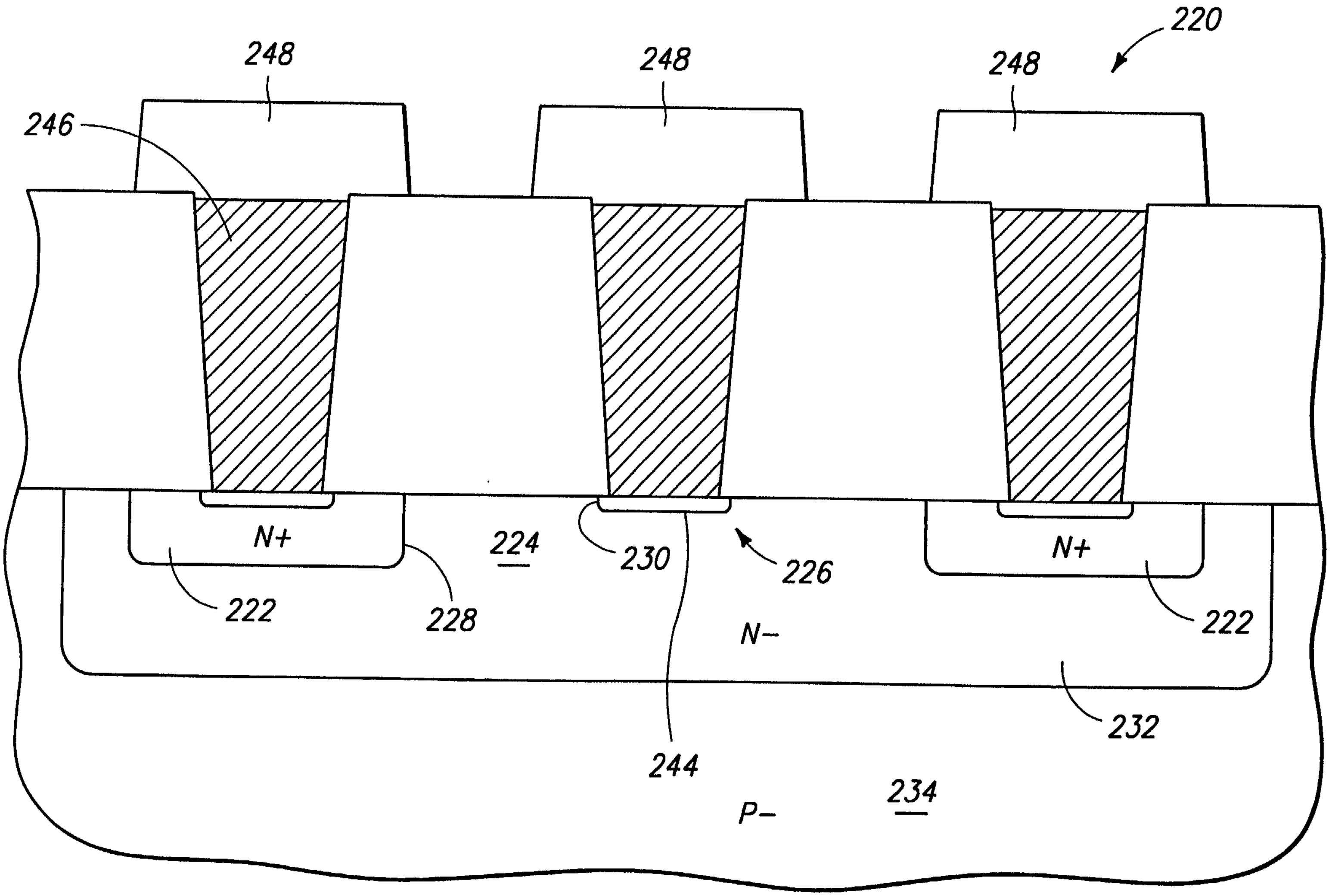

Fig 41

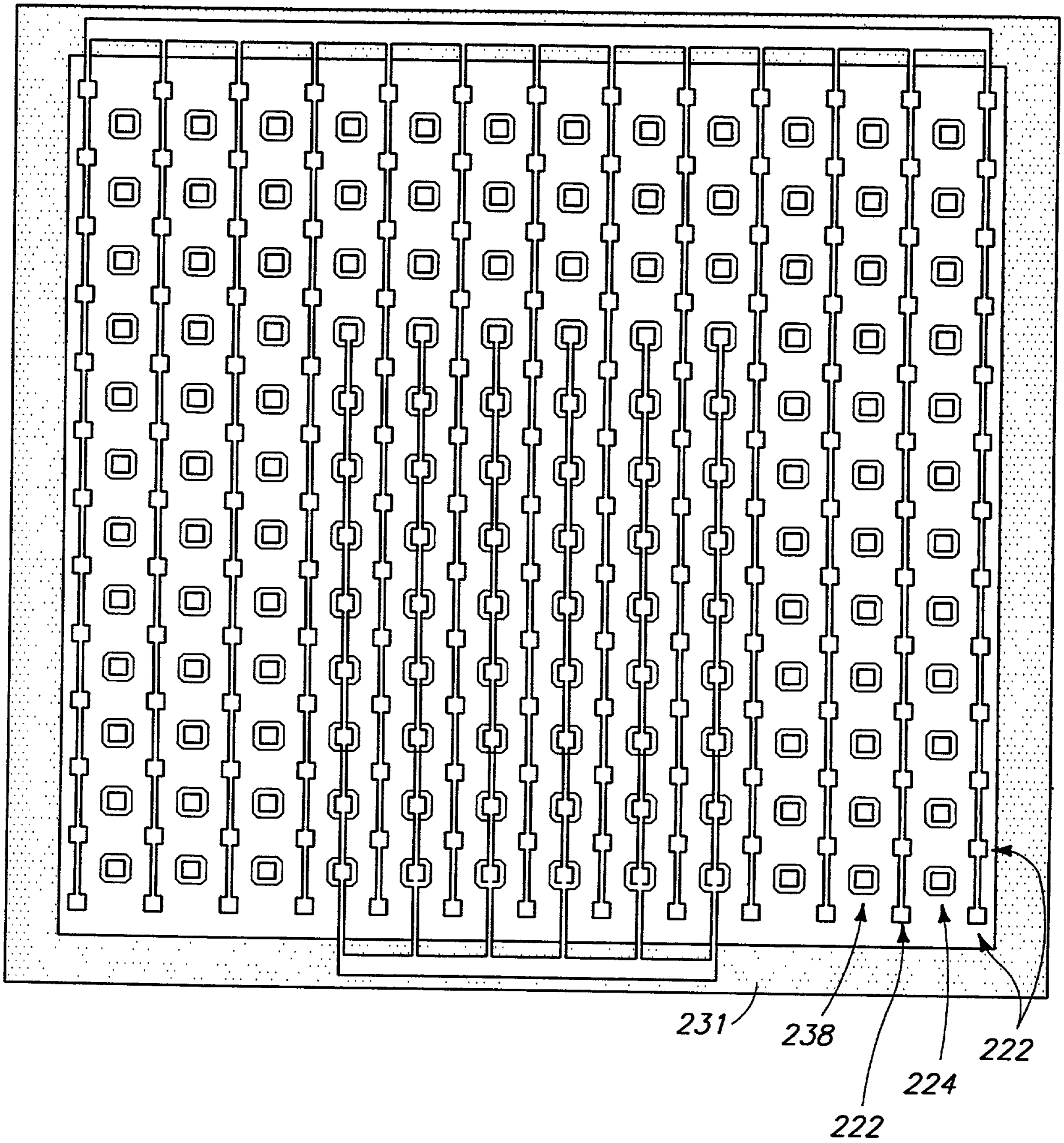

Fig 42

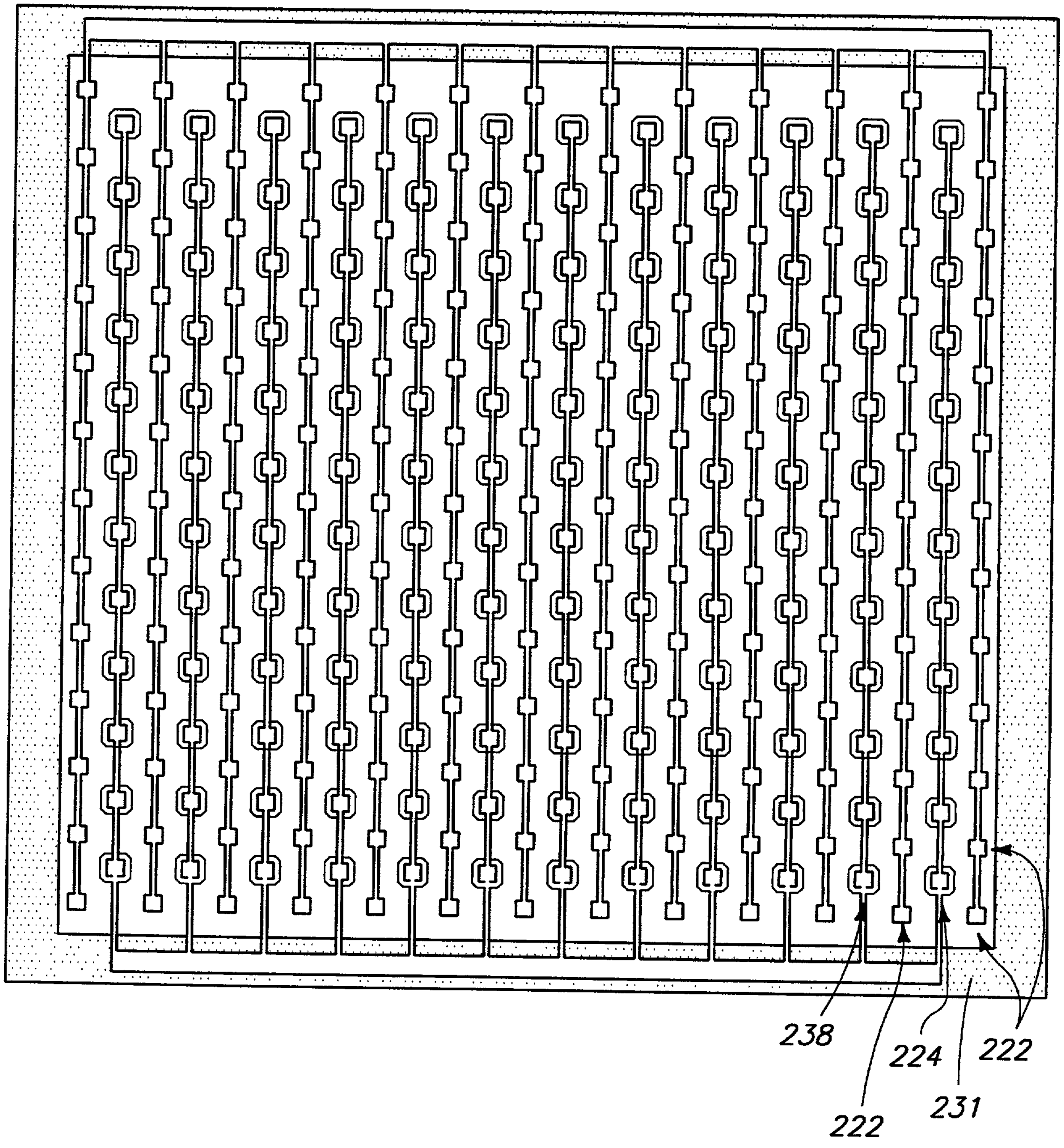

Fig 43

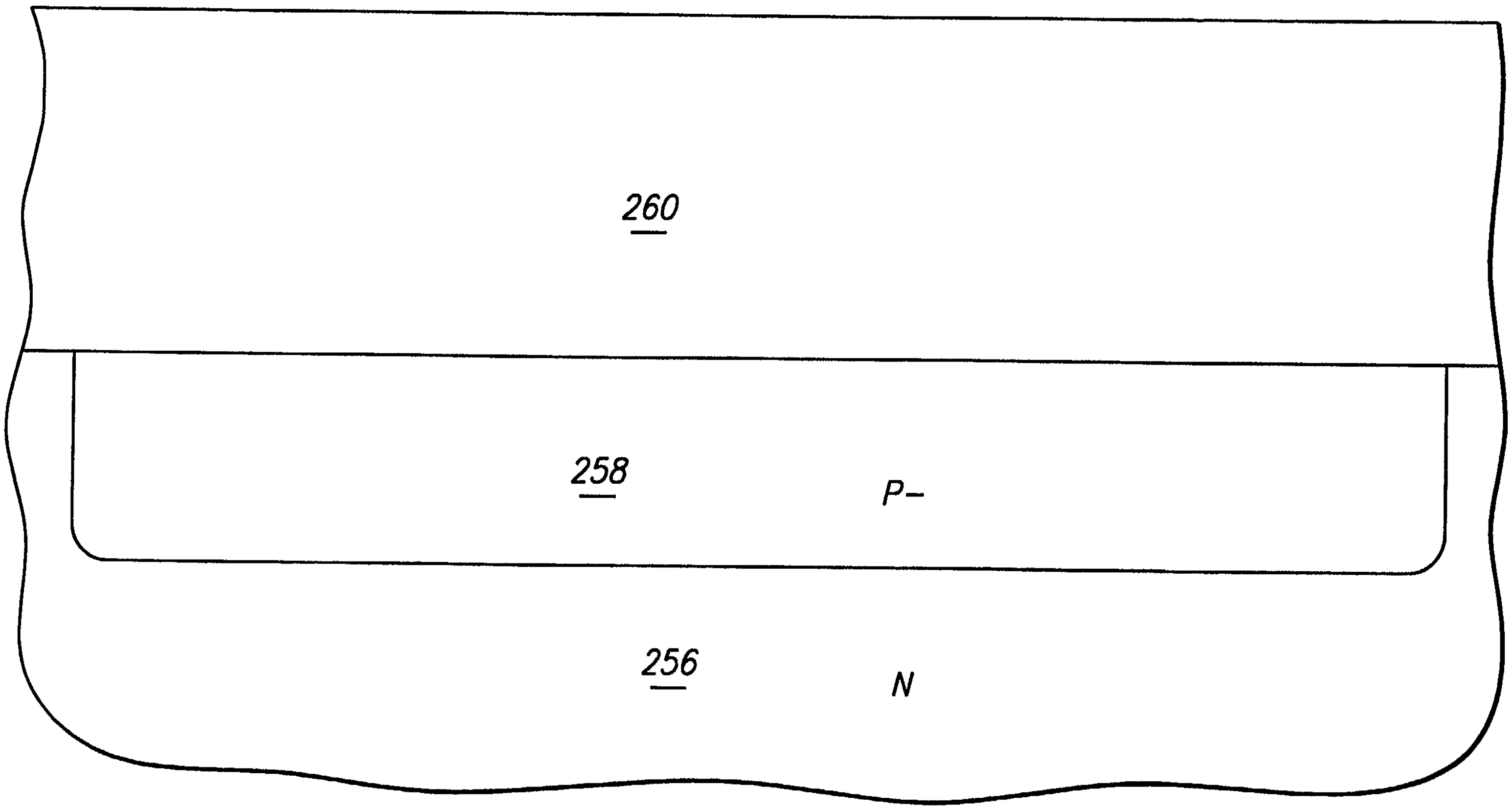

Fig 44

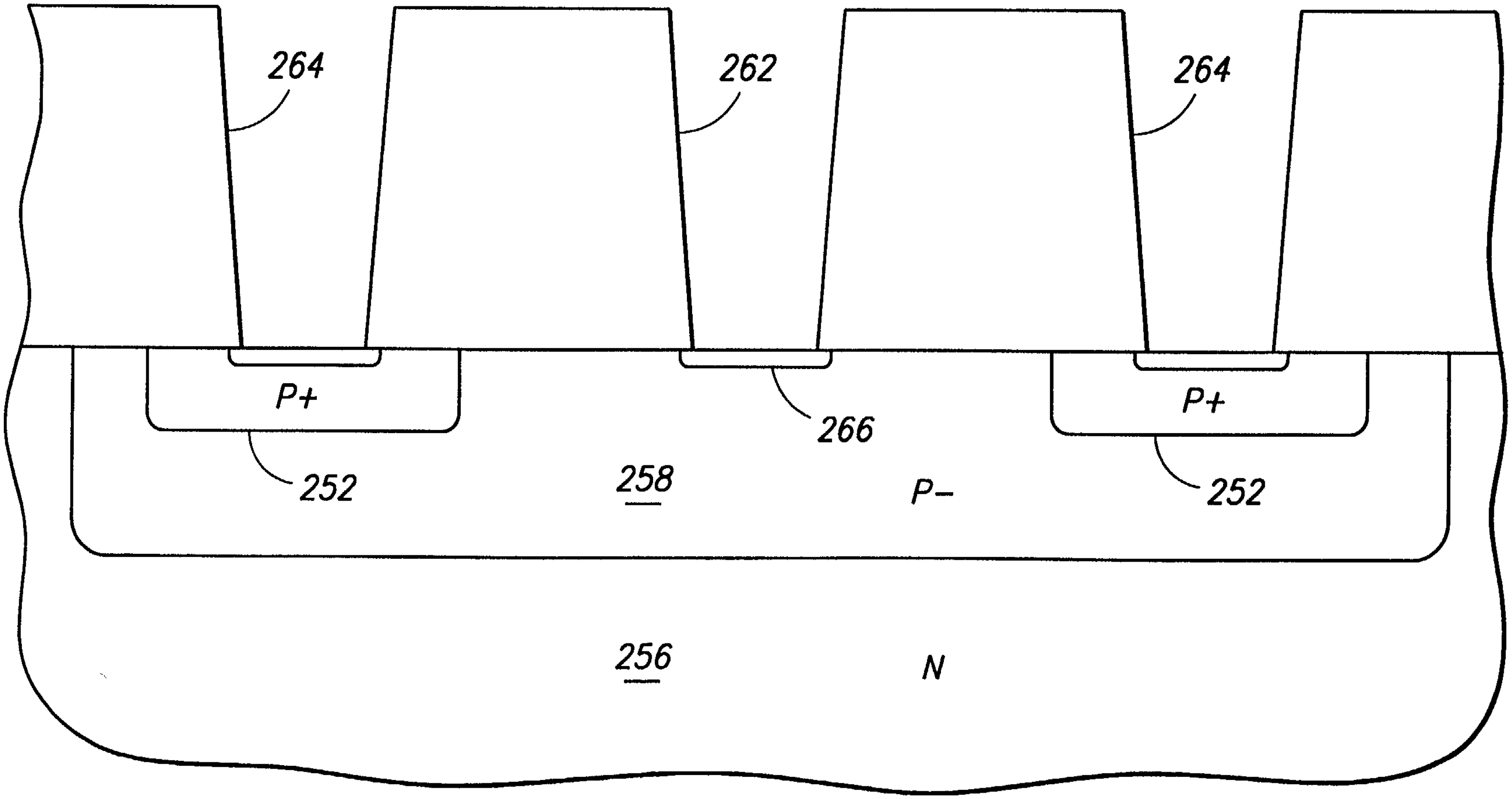

Fig 45

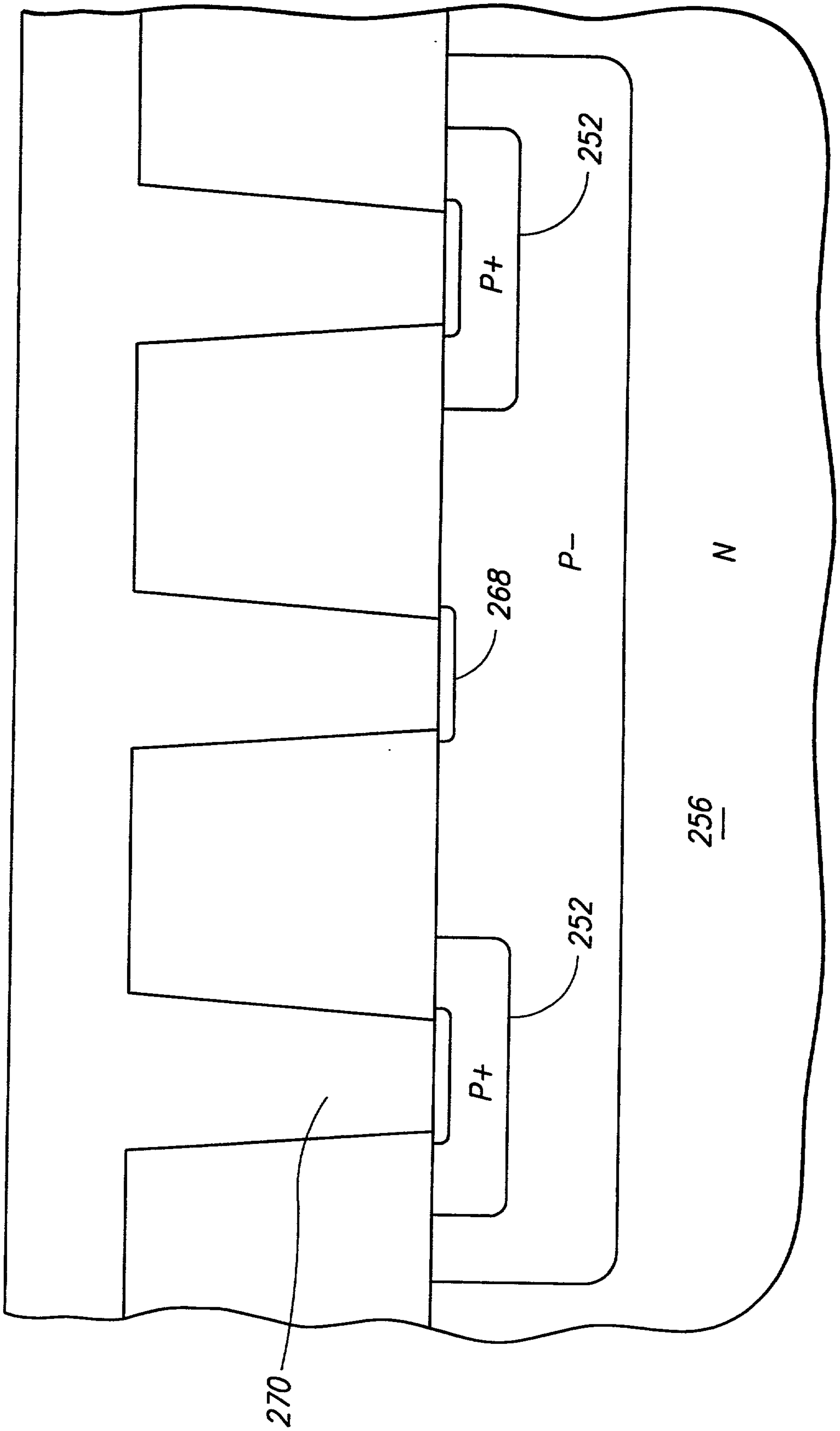

Fig 46

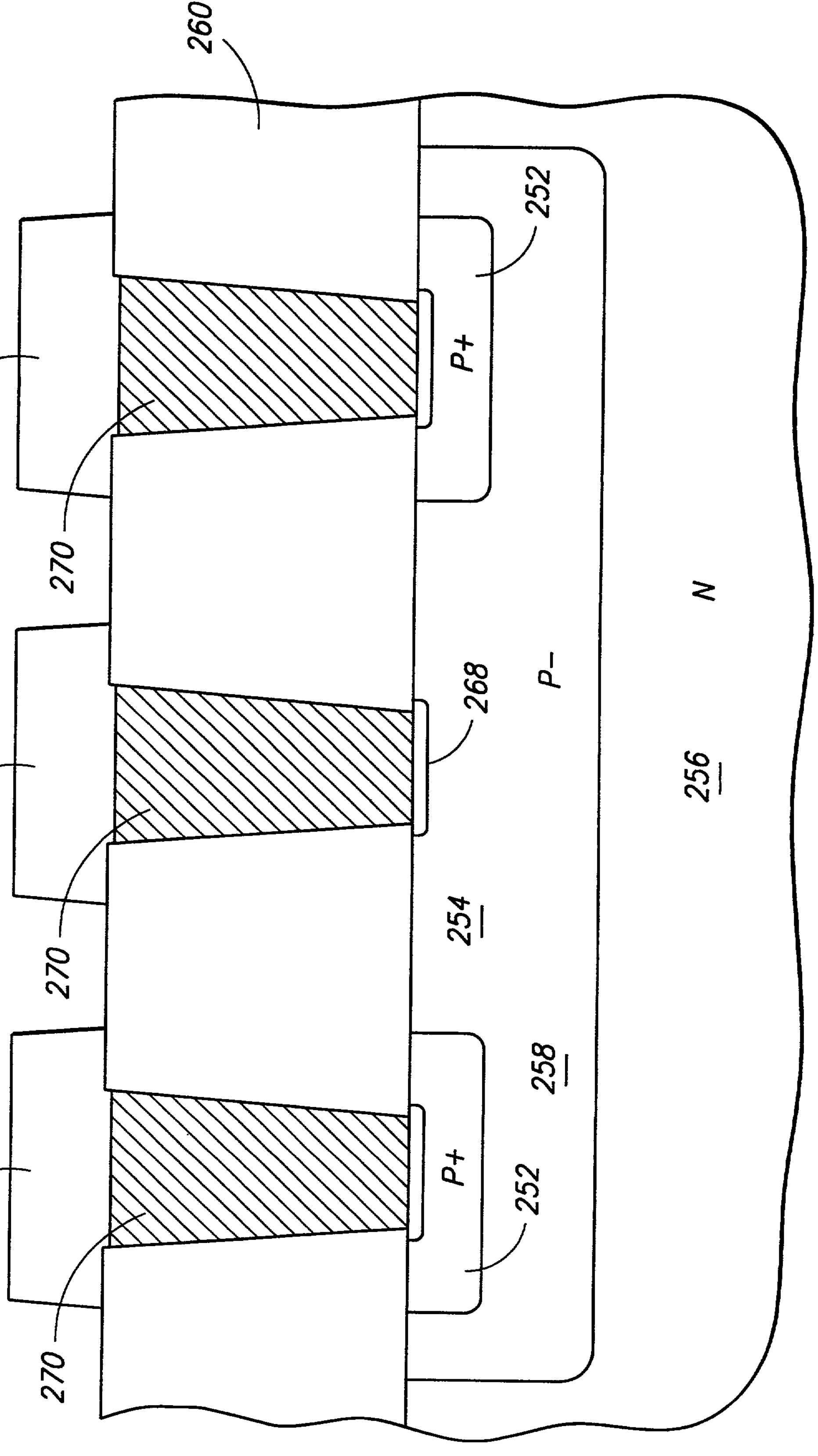

Fig. 67

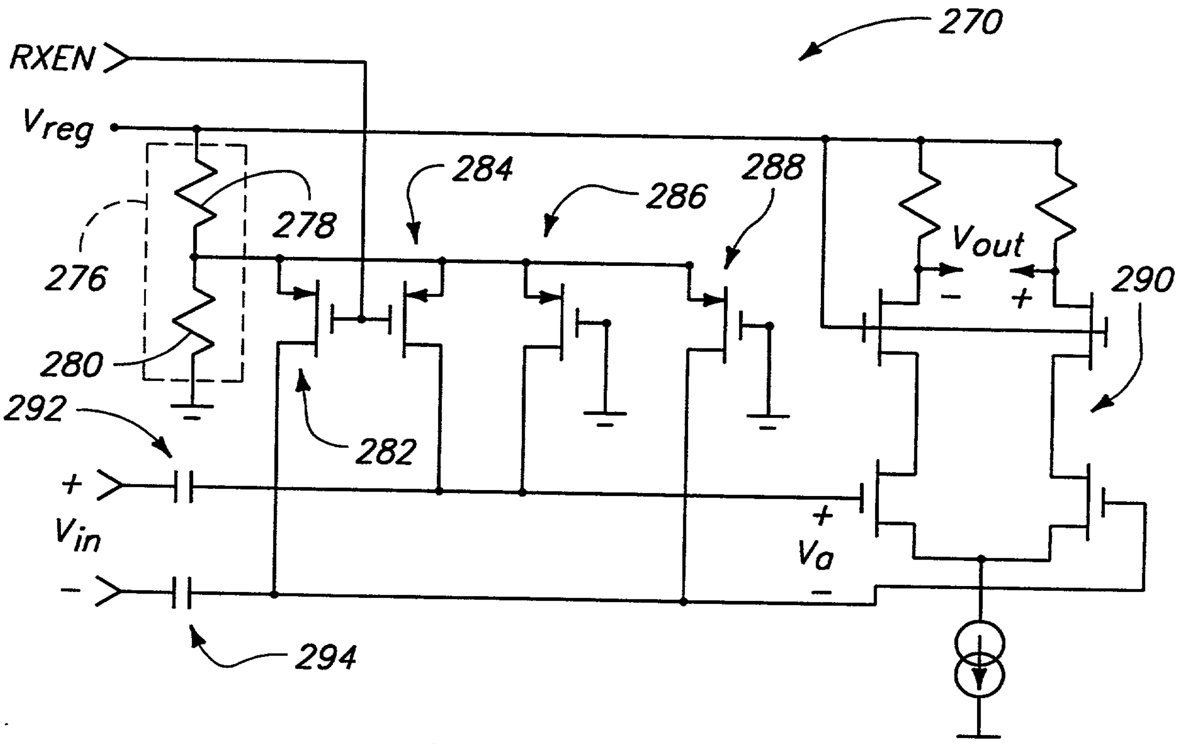
270
RXEN
Vreg
284
286
288
278
276
280
282
292
294
290
Vout
−
+
+
Vin
−
+
Va
−

Fig 48

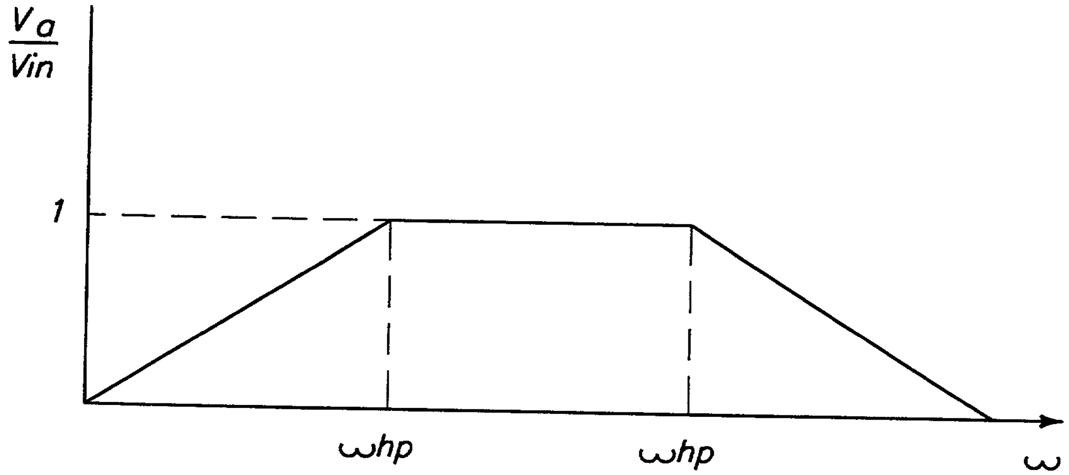
Va
Vin
1
ωhp
ωhp
ω

Fig 49

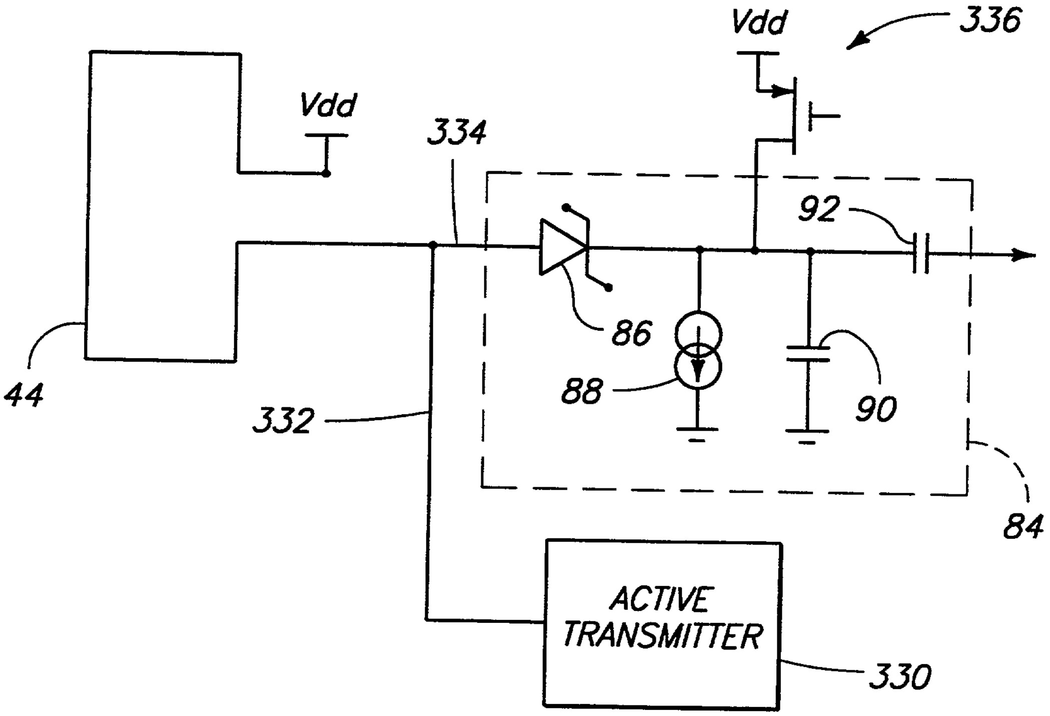
Vdd
336
Vdd
334
92
86
88
90
44
332
84
ACTIVE TRANSMITTER
330

FIG 50

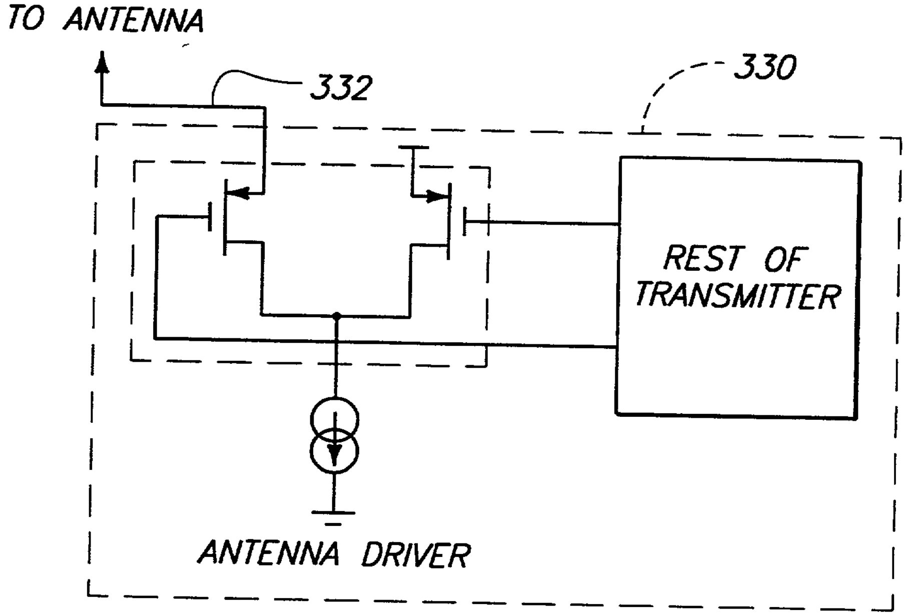
TO ANTENNA
332
330
REST OF TRANSMITTER
ANTENNA DRIVER

FIG 51

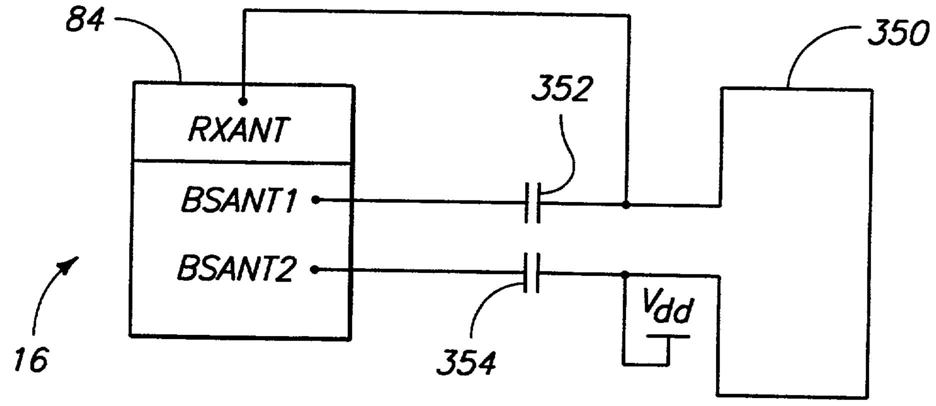
84
RXANT
BSANT1
BSANT2
16
352
354
V_{dd}
350

Fig 52

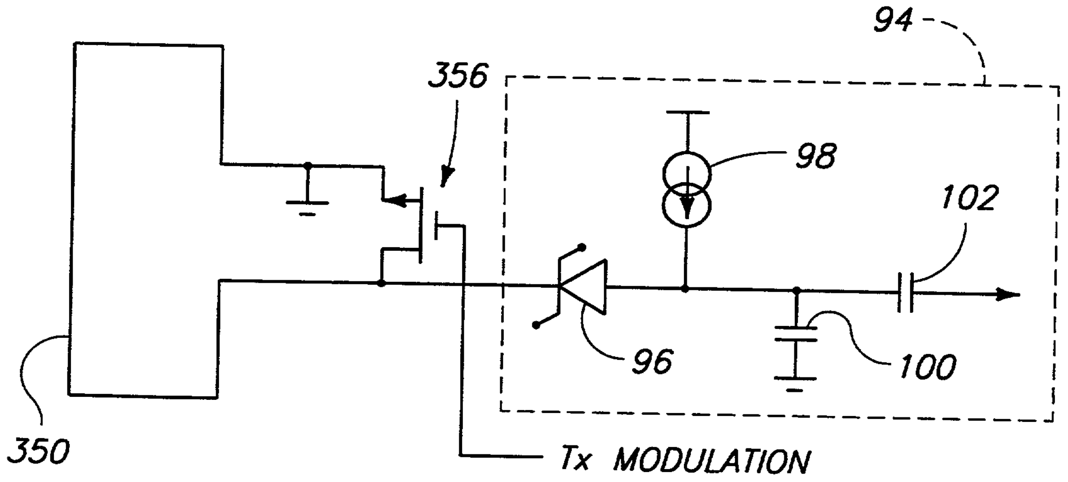
94
356
98
102
96
100
350
Tx MODULATION

Fig 53

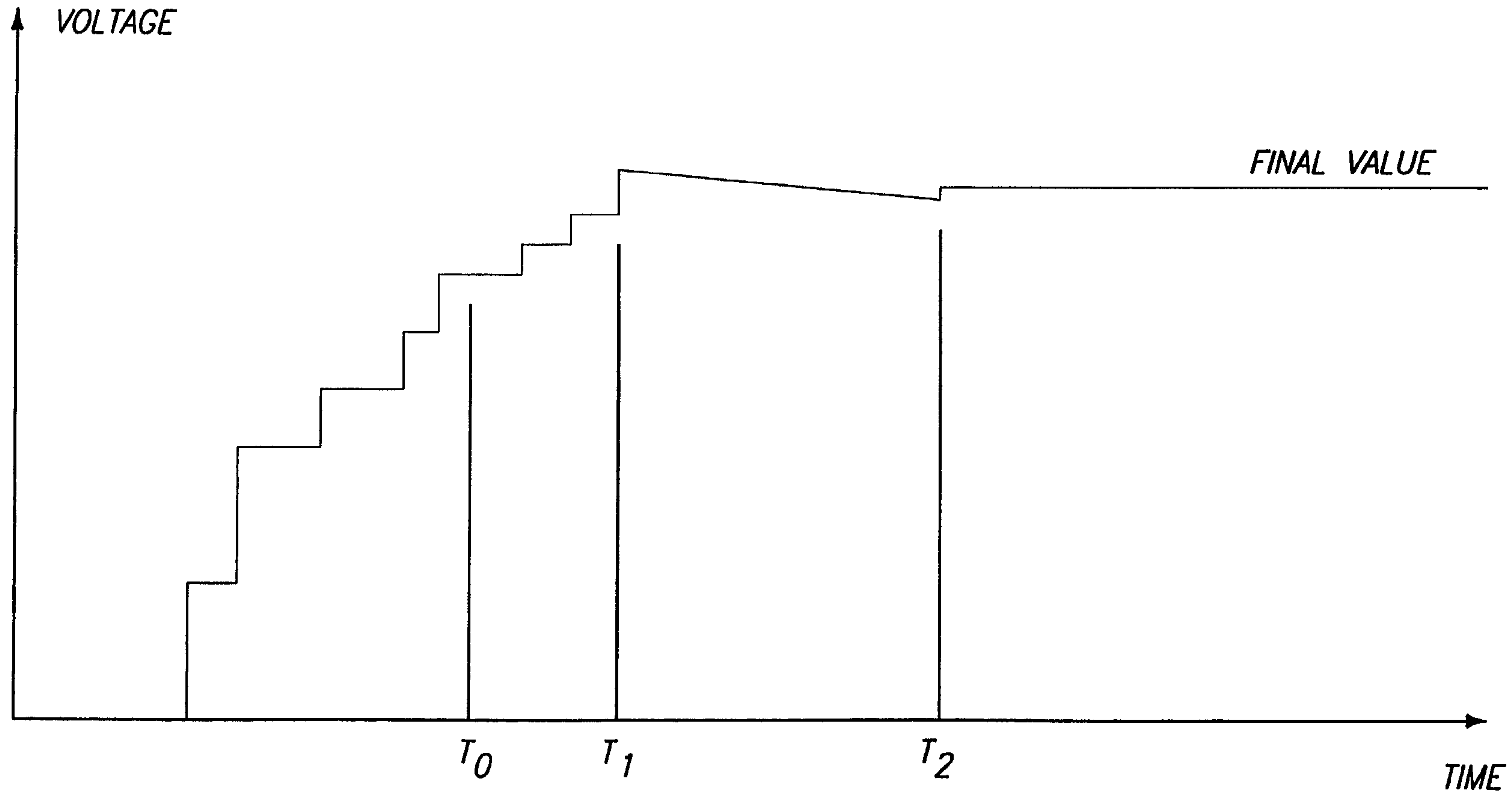

Fig 54

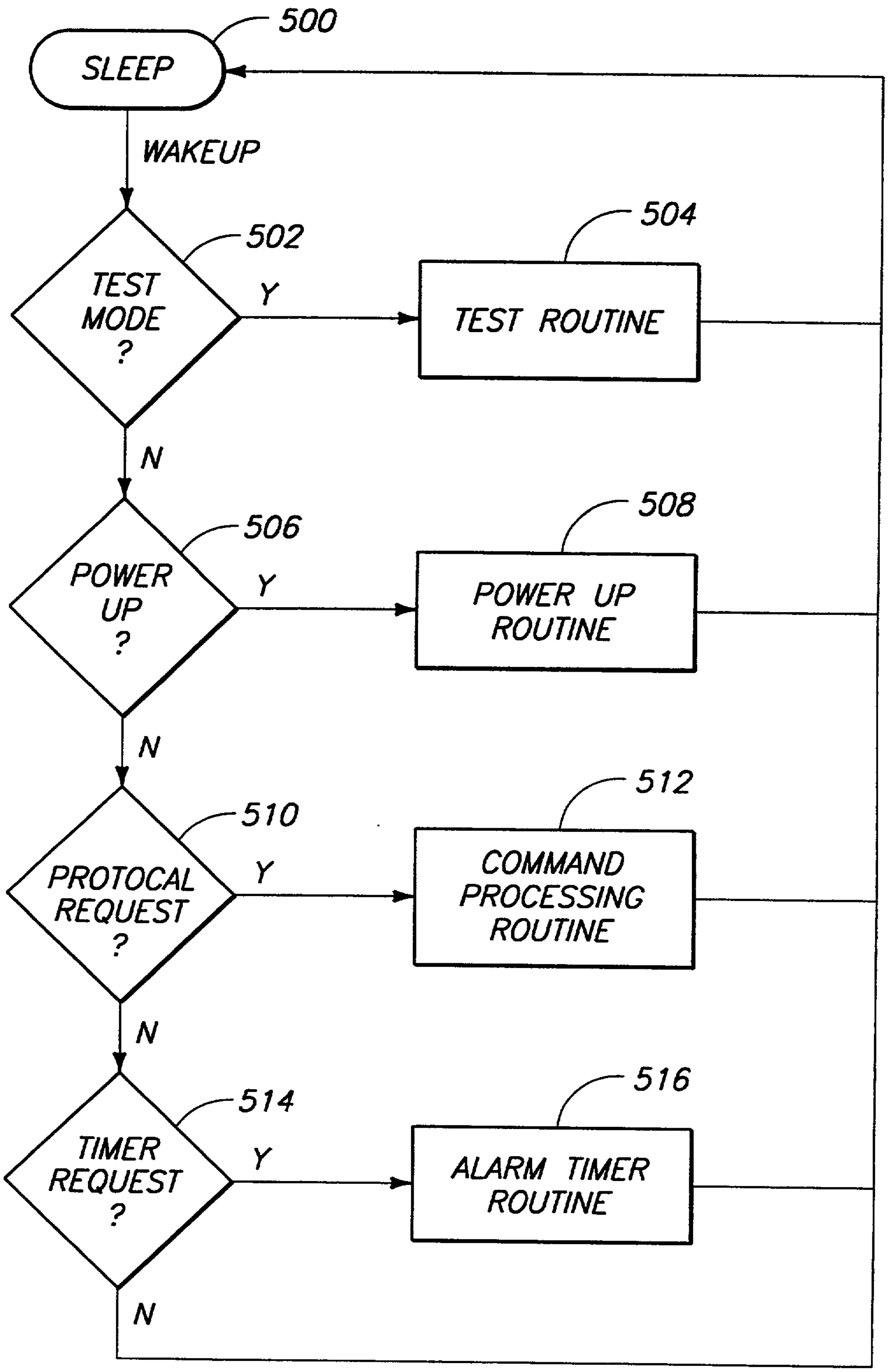
500
SLEEP
WAKEUP
502
TEST MODE ?
Y
504
TEST ROUTINE
N
506
POWER UP ?
Y
508
POWER UP ROUTINE
N
510
PROTOCAL REQUEST ?
Y
512
COMMAND PROCESSING ROUTINE
N
514
TIMER REQUEST ?
Y
516
ALARM TIMER ROUTINE
N

Fig 55

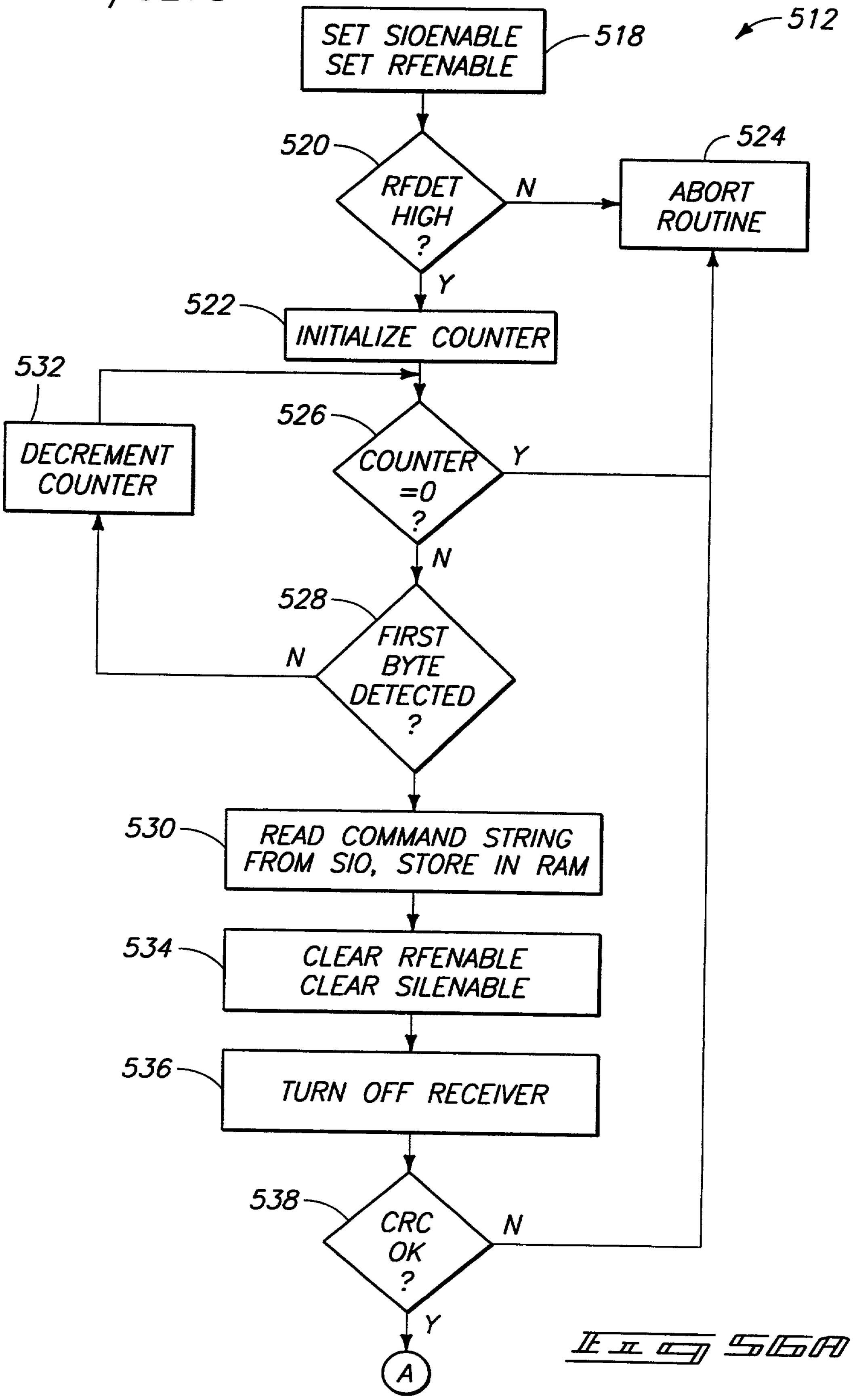
512
518
SET SIOENABLE
SET RFENABLE
520
RFDET HIGH ?
N
Y
524
ABORT ROUTINE
522
INITIALIZE COUNTER
532
DECREMENT COUNTER
526
COUNTER =0 ?
Y
N
528
FIRST BYTE DETECTED ?
N
530
READ COMMAND STRING FROM SIO, STORE IN RAM
534
CLEAR RFENABLE
CLEAR SILENABLE
536
TURN OFF RECEIVER
538
CRC OK ?
N
Y
A

Fig 56A

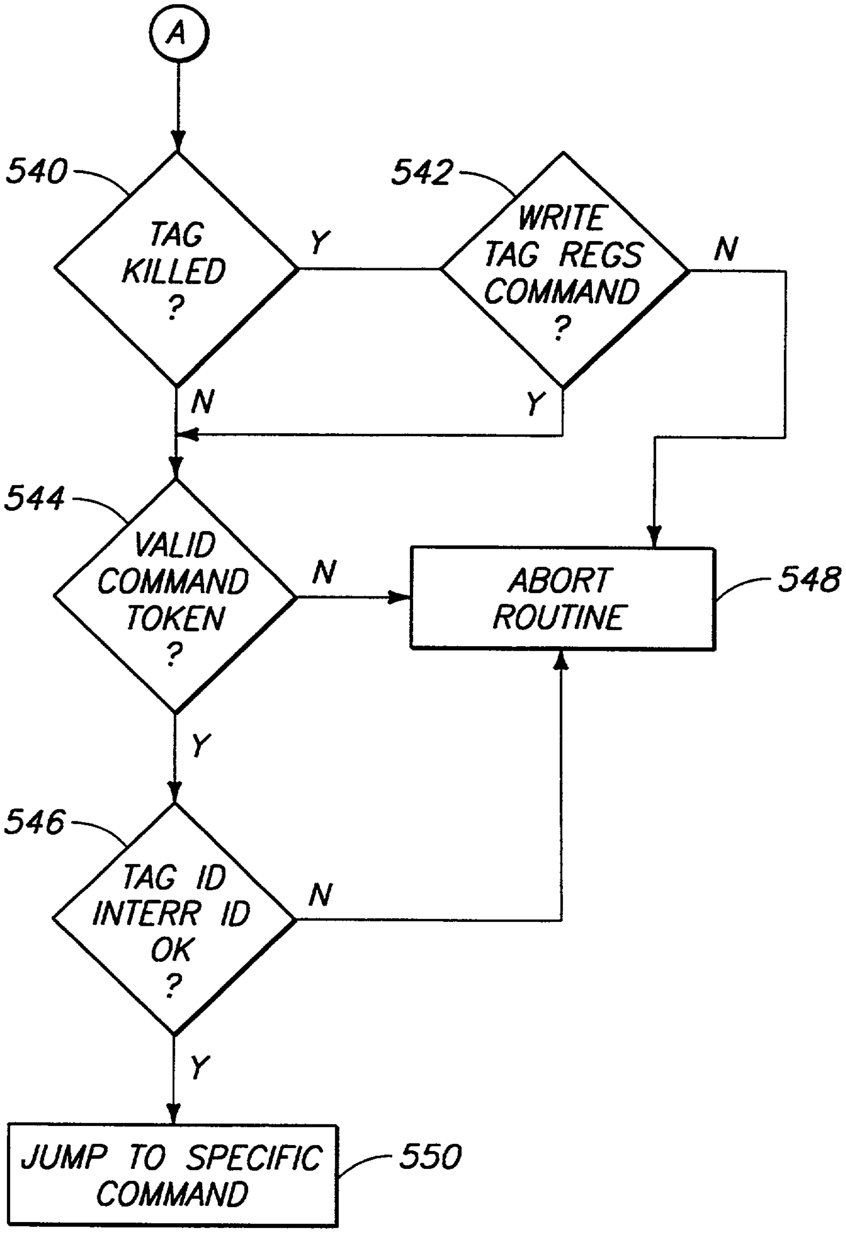
A
540
TAG KILLED ?
Y
542
WRITE TAG REGS COMMAND ?
N
N
Y
544
VALID COMMAND TOKEN ?
N
ABORT ROUTINE
548
Y
546
TAG ID INTERR ID OK ?
N
Y
JUMP TO SPECIFIC COMMAND
550

Fig 56B

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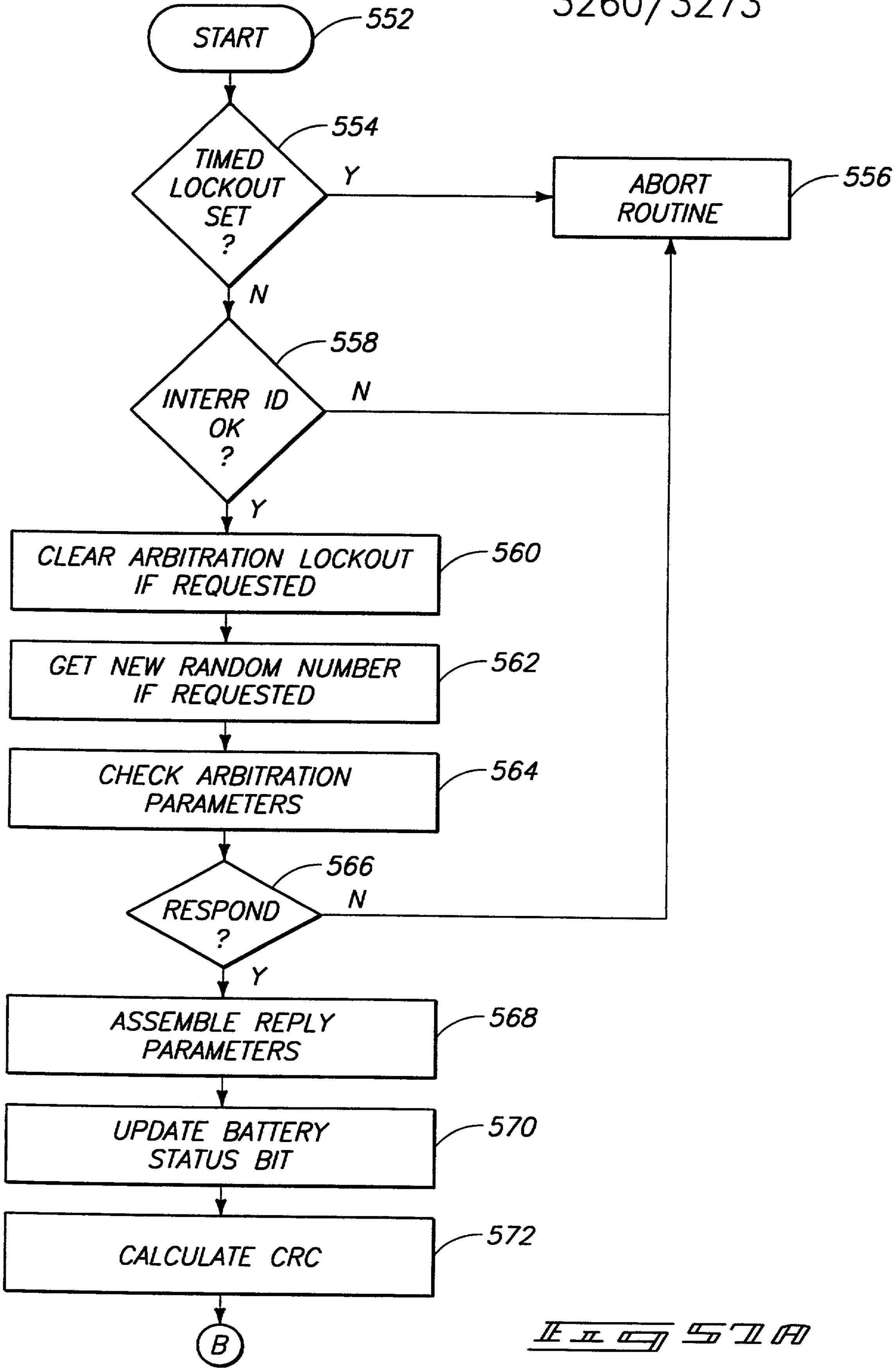

START
552
TIMED LOCKOUT SET ?
554
Y
ABORT ROUTINE
556
N
INTERR ID OK ?
558
N
Y
CLEAR ARBITRATION LOCKOUT IF REQUESTED
560
GET NEW RANDOM NUMBER IF REQUESTED
562
CHECK ARBITRATION PARAMETERS
564
RESPOND ?
566
N
Y
ASSEMBLE REPLY PARAMETERS
568
UPDATE BATTERY STATUS BIT
570
CALCULATE CRC
572
B

Fig 51A

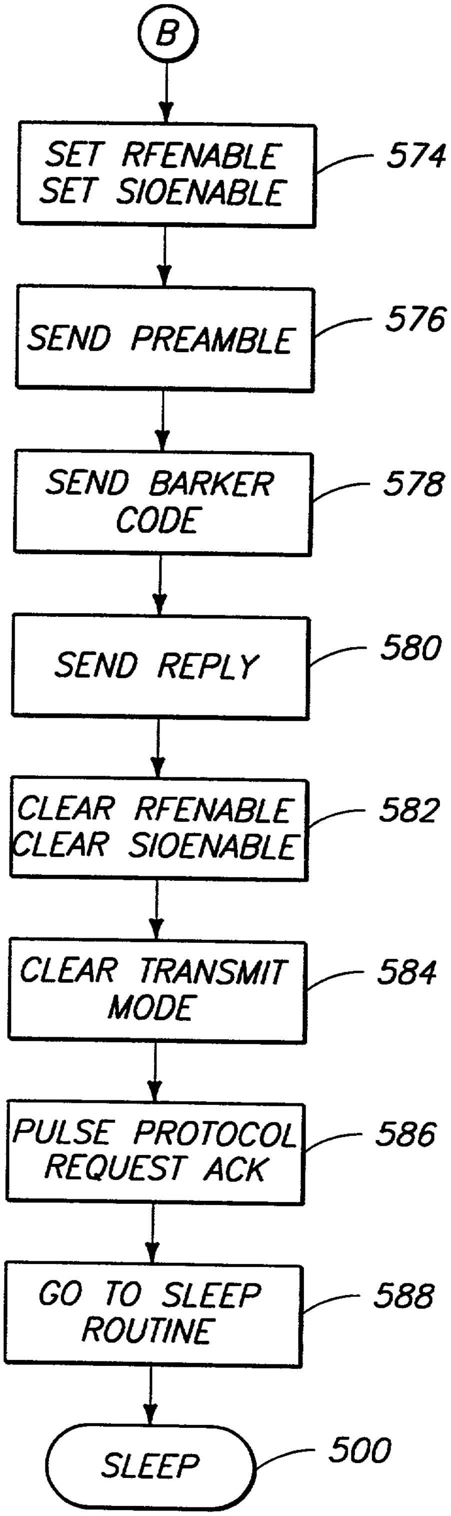
B
SET RFENABLE
SET SIOENABLE
574
SEND PREAMBLE
576
SEND BARKER CODE
578
SEND REPLY
580
CLEAR RFENABLE
CLEAR SIOENABLE
582
CLEAR TRANSMIT MODE
584
PULSE PROTOCOL REQUEST ACK
586
GO TO SLEEP ROUTINE
588
SLEEP
500

Fig 51B

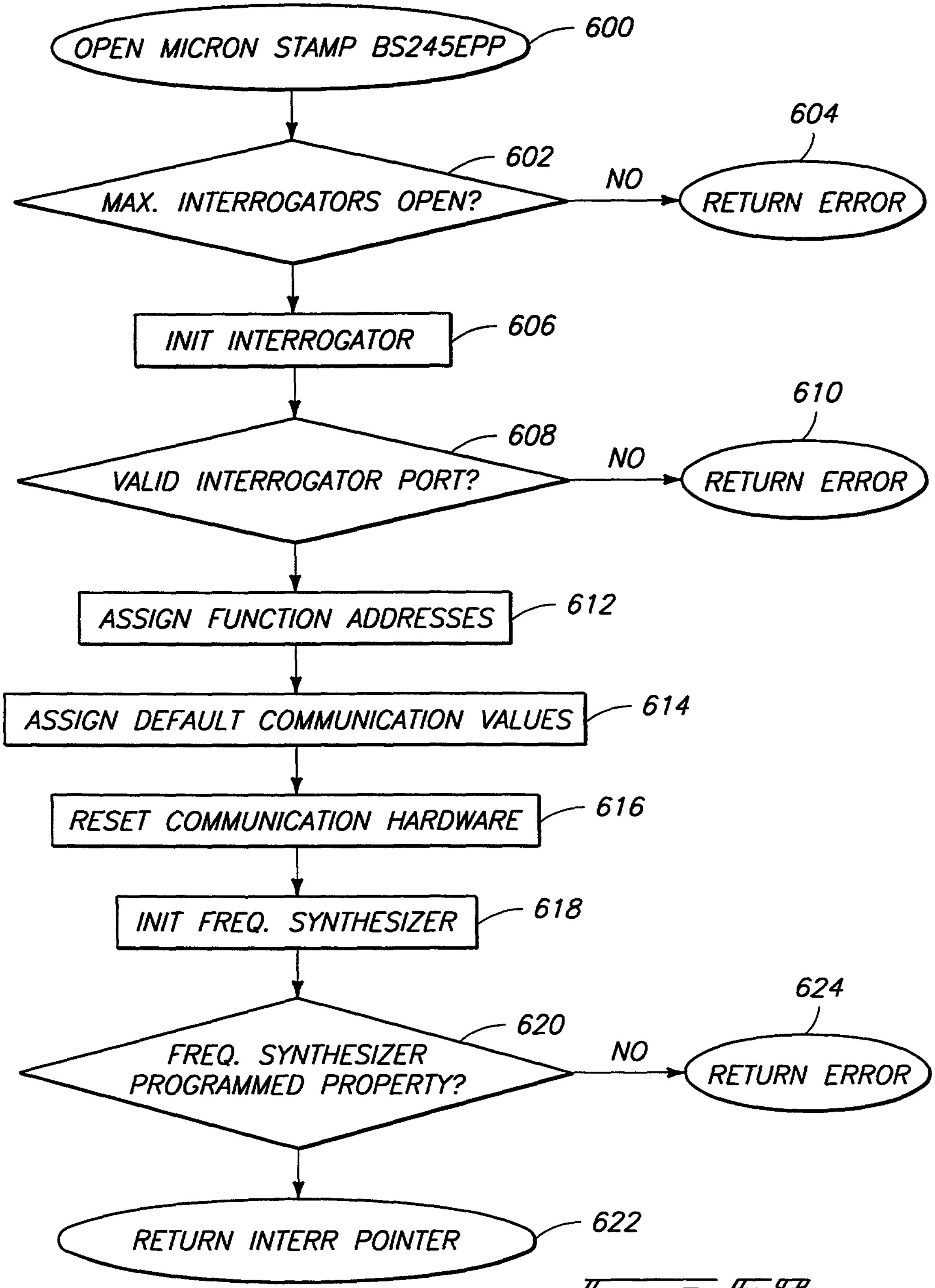
OPEN MICRON STAMP BS245EPP
600
MAX. INTERROGATORS OPEN?
602
NO
RETURN ERROR
604
INIT INTERROGATOR
606
VALID INTERROGATOR PORT?
608
NO
RETURN ERROR
610
ASSIGN FUNCTION ADDRESSES
612
ASSIGN DEFAULT COMMUNICATION VALUES
614
RESET COMMUNICATION HARDWARE
616
INIT FREQ. SYNTHESIZER
618
FREQ. SYNTHESIZER PROGRAMMED PROPERTY?
620
NO
RETURN ERROR
624
RETURN INTERR POINTER
622

Fig 58

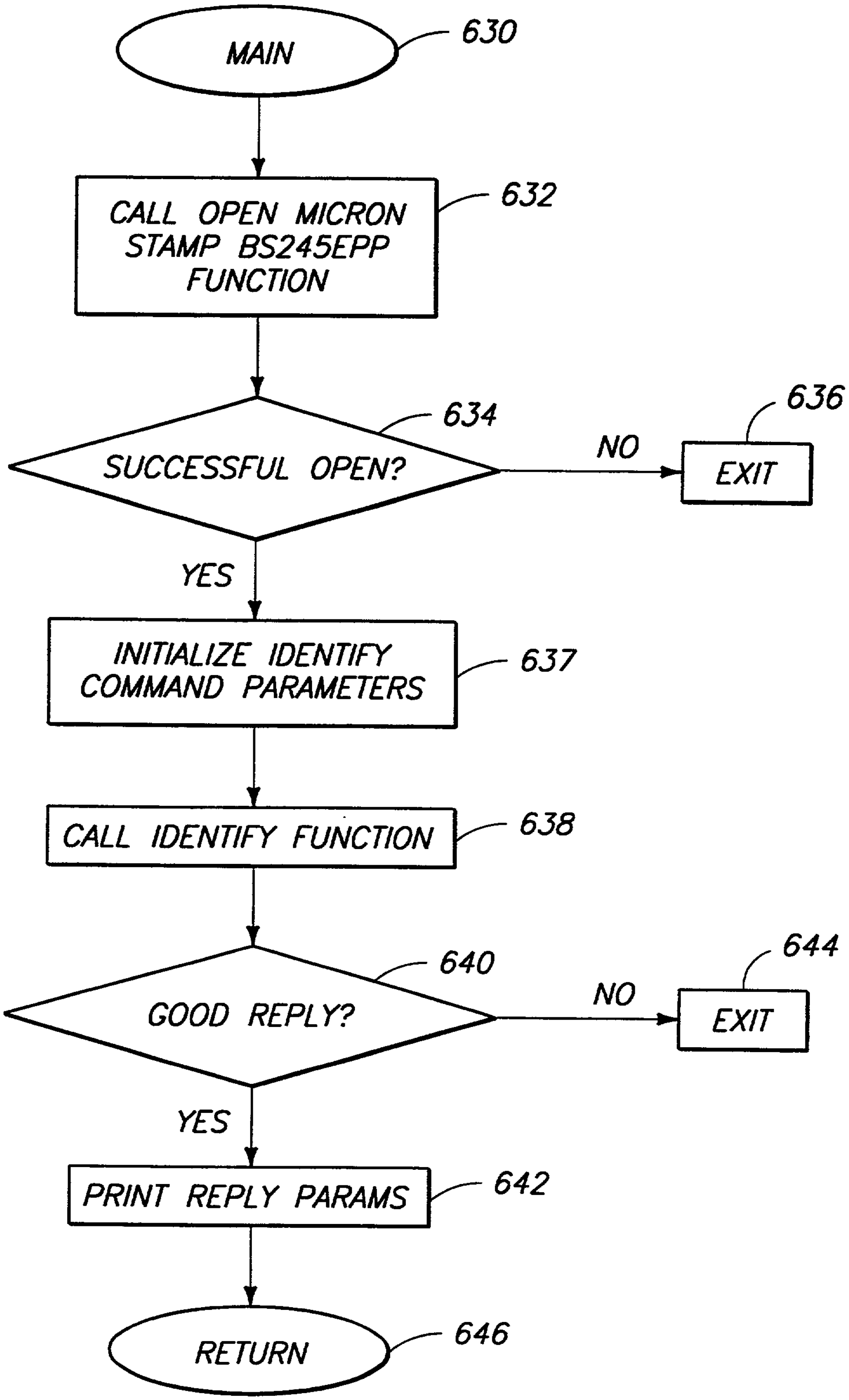
MAIN
630
CALL OPEN MICRON STAMP BS245EPP FUNCTION
632
SUCCESSFUL OPEN?
634
NO
EXIT
636
YES
INITIALIZE IDENTIFY COMMAND PARAMETERS
637
CALL IDENTIFY FUNCTION
638
GOOD REPLY?
640
NO
EXIT
644
YES
PRINT REPLY PARAMS
642
RETURN
646

Fig 59

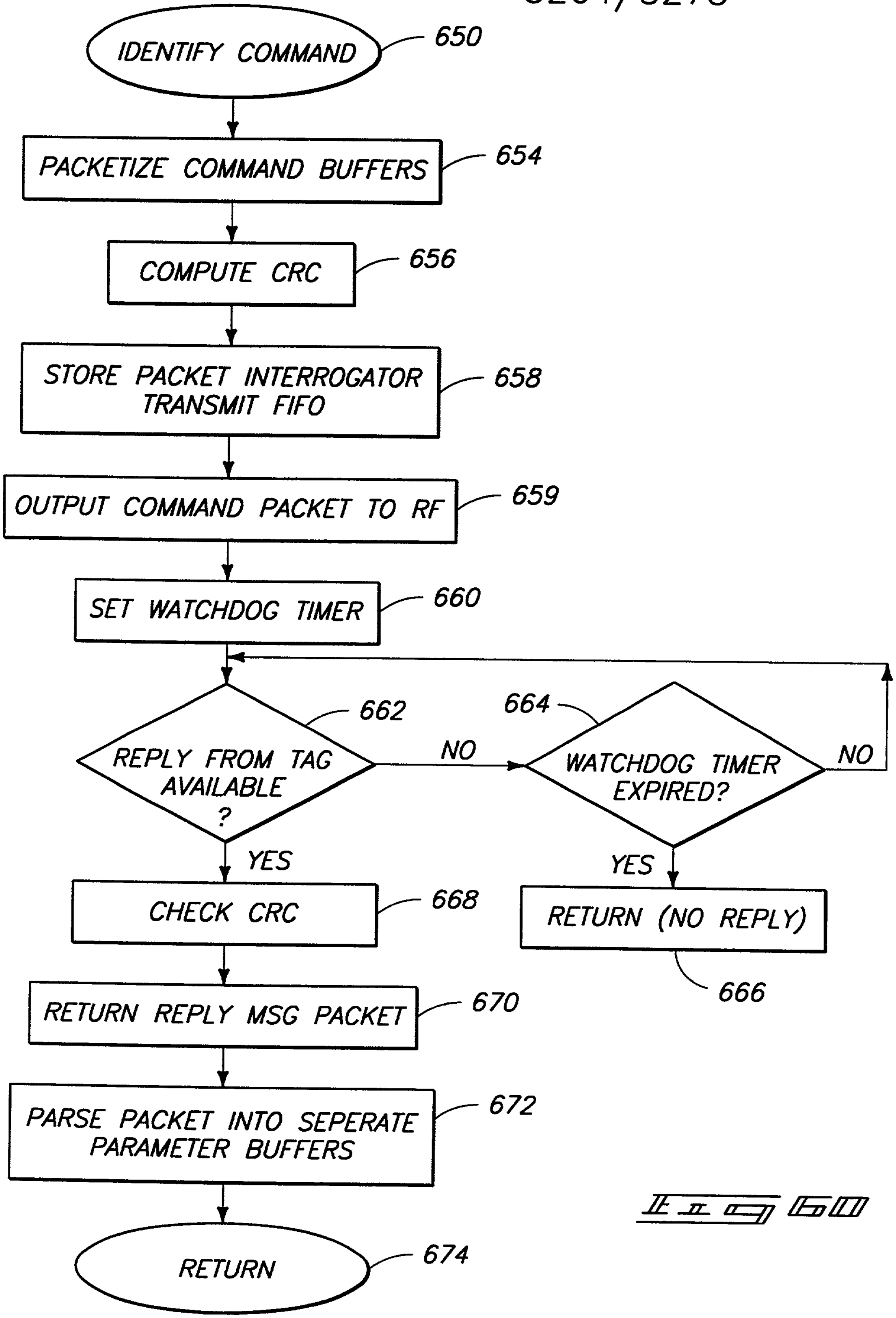
IDENTIFY COMMAND
650
PACKETIZE COMMAND BUFFERS
654
COMPUTE CRC
656
STORE PACKET INTERROGATOR TRANSMIT FIFO
658
OUTPUT COMMAND PACKET TO RF
659
SET WATCHDOG TIMER
660
662
664
REPLY FROM TAG AVAILABLE ?
NO
WATCHDOG TIMER EXPIRED?
NO
YES
YES
CHECK CRC
668
RETURN (NO REPLY)
666
RETURN REPLY MSG PACKET
670
PARSE PACKET INTO SEPERATE PARAMETER BUFFERS
672
RETURN
674

Fig 60

3265/3273

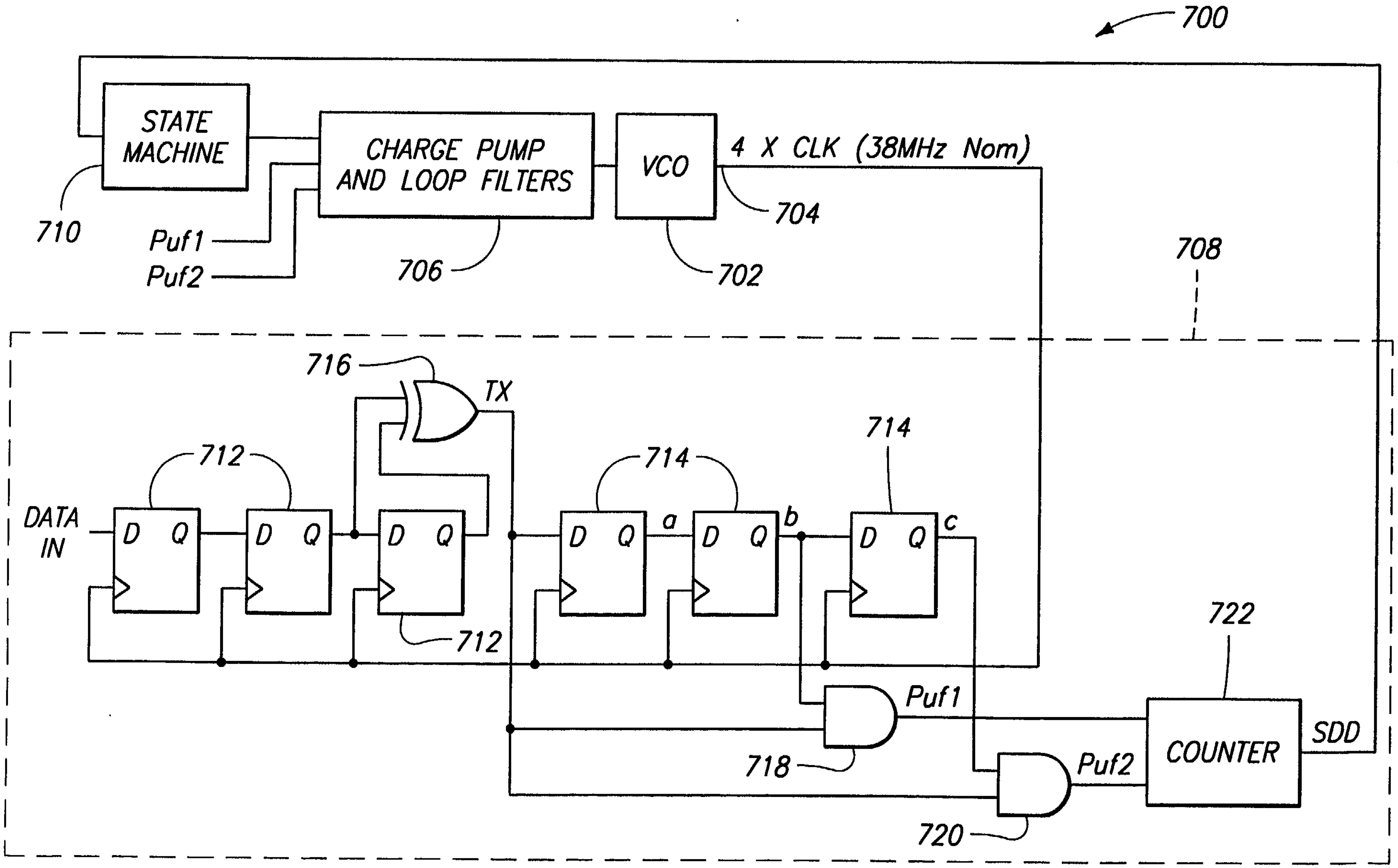

Fig 11

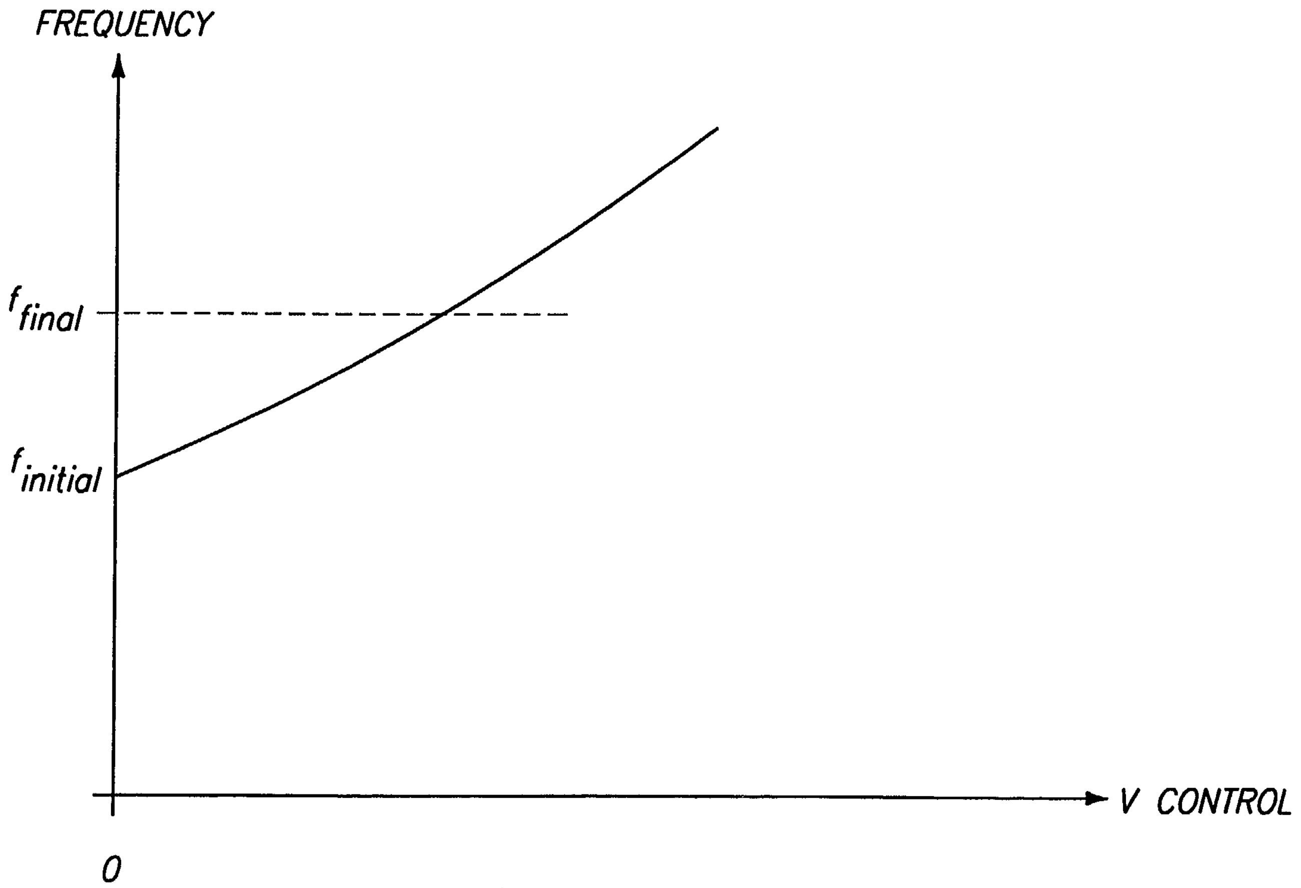

Fig 62

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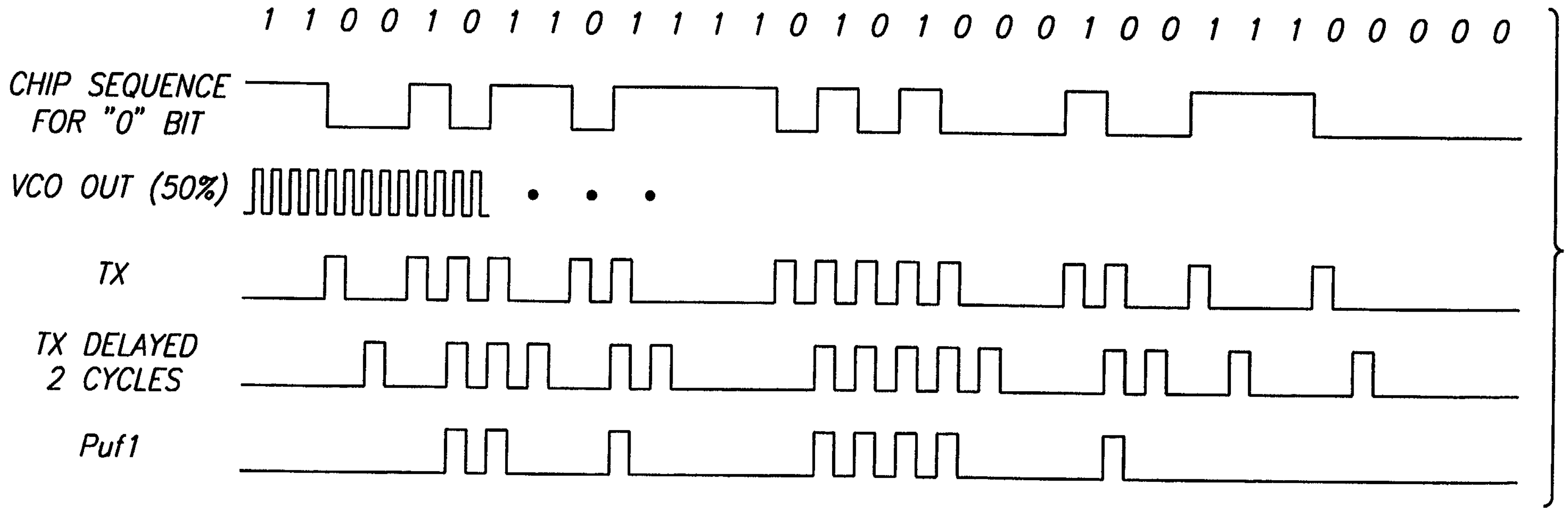


Fig 63

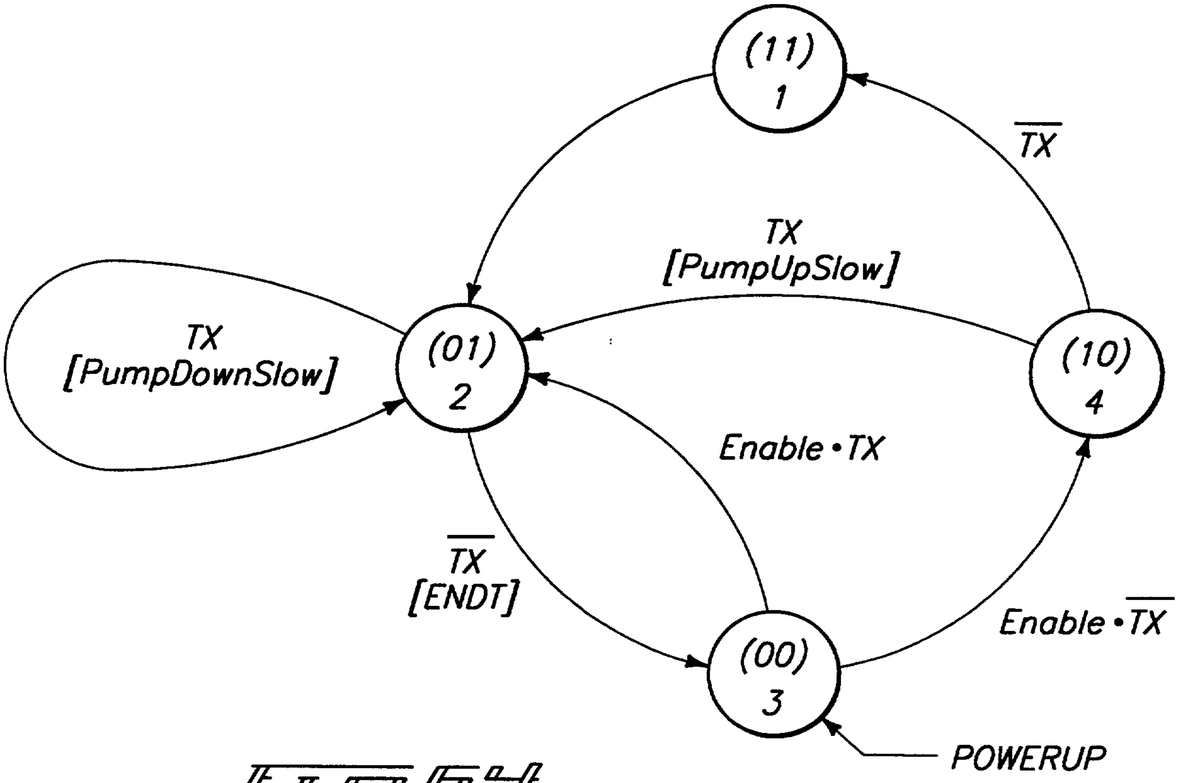

(11)
1
$\overline{TX}$
TX
[PumpUpSlow]
TX
[PumpDownSlow]
(01)
2
(10)
4
Enable • TX
$\overline{TX}$
[ENDT]
(00)
3
Enable • $\overline{TX}$
POWERUP

Fig 64

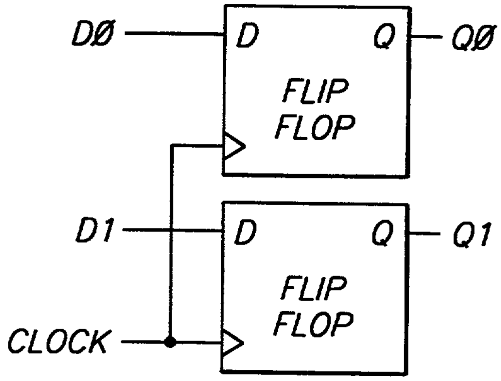
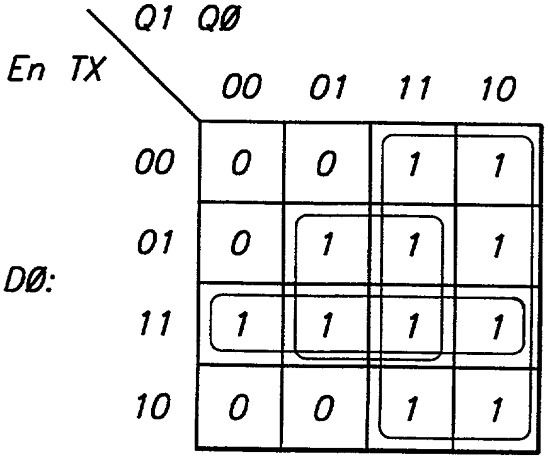

D0
D
Q
Q0
FLIP
FLOP
D1
D
Q
Q1
FLIP
FLOP
CLOCK

Fig 65

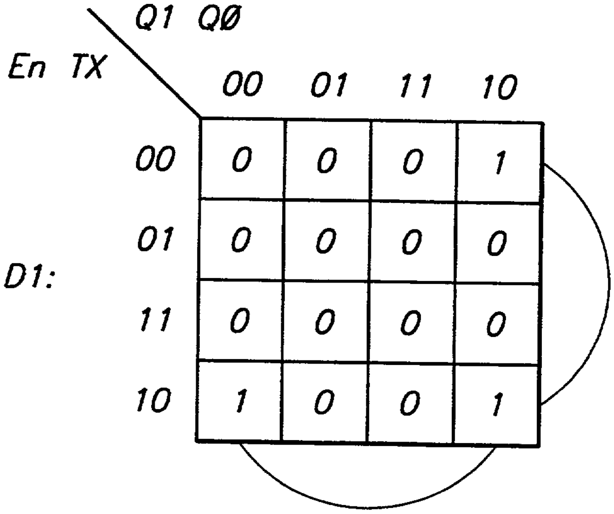
		PRESENT STATE		NEXT STATE	
ENABLE	TX	Q1	Q0	D1	D0
0	0	0	0	0	0
0	1	0	0	0	0
1	0	0	0	1	0
1	1	0	0	0	1
X	0	0	1	0	0
X	1	0	1	0	1
X	X	1	1	0	1
X	0	1	0	1	1
X	1	1	0	0	1

Fig 66



En TX \ Q1 Q0	00	01	11	10
00	0	0	1	1
01	0	1	1	1
11	1	1	1	1
10	0	0	1	1

Fig 67



En TX \ Q1 Q0	00	01	11	10
00	0	0	0	1
01	0	0	0	0
11	0	0	0	0
10	1	0	0	1

Fig 68

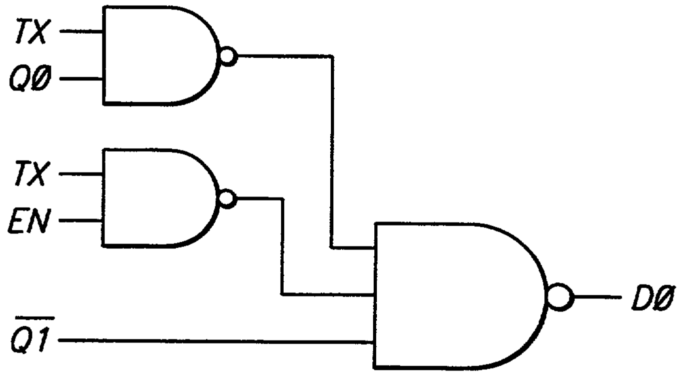

TX
Q0
TX
EN
$\overline{Q1}$
D0

Fig 69

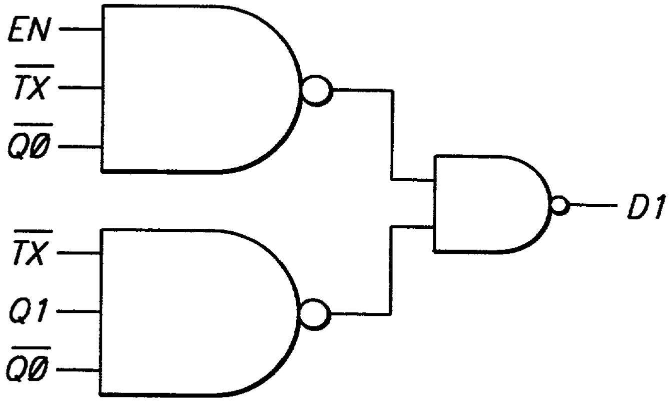

EN
$\overline{TX}$
$\overline{Q0}$
$\overline{TX}$
Q1
$\overline{Q0}$
D1

Fig 70

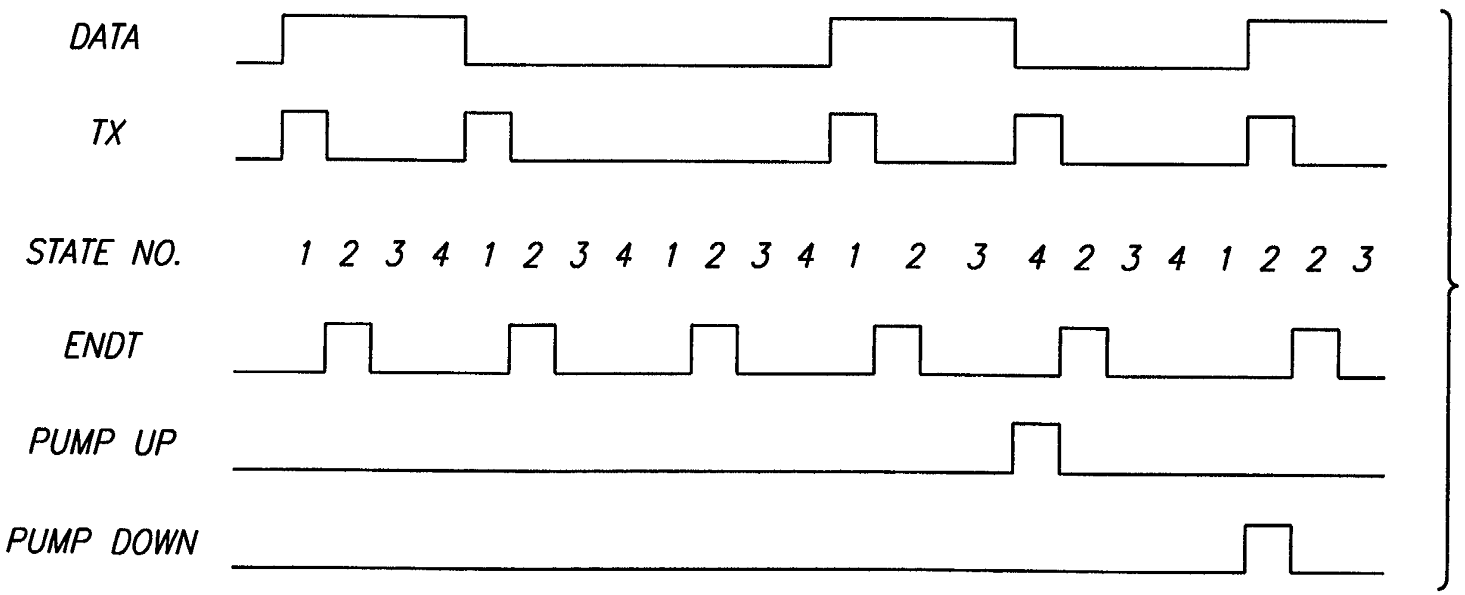

DATA
TX
STATE NO.
1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 2 3 4 1 2 2 3
ENDT
PUMP UP
PUMP DOWN

FIG 11

NAME	CURRENT (μA)	ΔV (mV)	$\Delta V / V$ CONTROL(NOM) X 100
COARSE	40	160	13.3%
MEDIUM	10	40	3.3
MEDIUM FINE	1	2.6	0.22
FINE	0.1	0.26	0.022

FIG 12